The Chemical Age

A Weekly Journal Devoted to Industrial and Engineering Chemistry

VOL. XVII. No. 425 AUGUST 20; 1927 Prepaid Annual Subscription: United Kingdom, £1.1.0; Abroad, £1.6.0.

Contents

NOTICES:—All communications relating to editorial matter should be addressed to the Editor, who will be pleased to consider articles or contributions dealing with modern chemical developments or suggestions bearing upon the advancement of the chemical industry in this country. Communications relating to advertisements or general matters should be addressed to the Manager.

The prepaid subscription to THE CHEMICAL AGE *is 21s. per annum for the United Kingdom, and 26s. abroad. Cheques, Money Orders and Postal Orders should be made payable to Benn Brothers, Ltd.*

Editorial and General Offices: Bouverie House, 154, Fleet Street, London, E.C.4.

Telegrams: "Allangas, Fleet, London." Telephone: City 0244

A Forecast of Gas Warfare

ISSUED with the Army Orders for June, 1927, is the latest manual on "Defence against Gas," in which toxic gases are treated as a recognised military weapon of the future, and are discussed with the complete lack of sentiment that distinguishes all war organisation. It is true that the manual is labelled "provisional" and that it contains on the first leaf the following statement:—

> In accordance with the international agreement entered into by His Majesty's Government and the Governments of the self-governing Dominions of India, the British Government will, on the outbreak of war, endeavour, in conjunction with its allies, to obtain from the enemy Government or Governments an engagement that poisonous gas shall not be used as a weapon of war. In the event of failure to obtain such an engagement, His Majesty's Government will be free to take such action as circumstances demand.

With these exceptions, the Army Council takes gas warfare very much for granted, and lays down the general principles on which it should be met. When first used in the "Great War," it proved itself to be "an important weapon," and in the view of the Army Council it is therefore essential that adequate measures of defence should be provided and that all ranks should be trained in its use.

The term "gas," in connection with warfare, is very loosely used, but includes any chemical substance, whether a solid, a liquid, or a gas, employed for its poisonous or irritant effects on the human body. Such substances are generally dispersed in the air as vapours or poisonous smokes, and exercise their action on personnel exposed to the contaminated air. Some, such as mustard gas, also act by direct contact of the liquid with the human body. They are divided broadly into two classes—non-persistent and persistent. When liberated, non-persistent substances are rapidly converted into gas or smoke, which may be dissipated by the wind. Persistent gases generally consist of liquids, which contaminate the area on which they are released and continue to give off vapours for a considerable period. The degree of persistence is determined by the extent of the contamination, temperature, rainfall, shelter from wind, and nature of the soil. Most war gases, being heavier than air, tend to flow into gullies and valleys, leaving the tops of hills comparatively free.

The three main objects of gas attacks are to produce casualties; to reduce the efficiency of troops by compelling them to wear respirators and other impediments to movement; and to render certain areas of ground dangerous to occupy. The gas may be discharged by many methods—from artillery shell and mortar bombs, from projector bombs, from aircraft, either in bombs or as a spray; in cloud form from cylinders; as poisonous smoke from generators; and from hand and rifle grenades. The form that most interests the civilian population is the attack from the air, the effects of which may be gathered from the following two paragraphs:—

> 1. The employment of gas by aeroplanes and airships is quite practicable, and must be anticipated. Aircraft bombs may contain a high proportion of gas, since they need only be stout enough to be handled and have not to withstand the shock of discharge from a gun.
>
> 2. Another possible method of gas attack from the air consists in spraying a liquid poison, such as mustard gas, from tanks carried by aircraft, whence it falls like rain.

Presumably, aircraft engaged on this pleasant mission would have to fly rather high, and the gas in its descent would become dissipated to some extent; but in the case of low-flying aircraft the effects might be deadly.

Against this rather terrifying prospect, what has the Army Council, with the aid of its chemists, to offer by way of protection? Nothing virtually beyond the respirator, and at the first suggestion of war one may imagine a very brisk trade in such appliances among the civilian population. The most efficient respirator includes chemicals and pads capable of protecting against all gases and poisonous smokes, but it would need, of course, to be frequently renewed, and there is the further possibility of new forms of gas that may require new chemical protection. As regards mustard

gas rained from the air, there appears to be no real protection, beyond keeping indoors. Gas-proof shelters would meet the case, but, as is frankly pointed out, in mobile warfare it would usually be impracticable to provide such in large numbers. The private person may, however, be faintly relieved to learn that "a room with sound walls, roof, and floor can easily be made reasonably gas-tight." Even this, however, would involve distinct domestic inconveniences. All windows, if not close fitting, should be puttied up and all other openings blocked. The doors should be provided with cloth jambs to stop any leakage of air. Fire and other means of heating must be extinguished when the room is used for gas protection, and chimneys stopped up. Life in such conditions could not be too pleasant.

Generally speaking, the balance of advantage would appear to be heavily on the side of the attack. The defence, at best, is only partial, and, although one would hesitate to fix any limit to the inventive capacity of the chemist and engineer, it is not easy to see how effective protection can go far beyond the means already suggested. The final impression left by a study of this manual is a sense of the essential madness of war mentality, and of the imperative need of avoiding every step that tends to bring it into action. Whether chemical warfare is a degree more or a degree less humane than the accepted barbarities of war is a small side-point; the only real remedy against either is the avoidance of war altogether.

Chemical Trade Returns

In arriving at the true significance of the chemical trade returns, it is necessary to remember that 1926 was a year of great industrial disorganisation, and that 1925 was the last normal year. In some measure, the disorganisation passed over to the early months of this year, and in order to obtain a clear idea of the state of affairs it seems advisable to keep all the three years—1925, 1926, and 1927—in view. The imports of chemicals, dyes, drugs, and colours for the seven months ending July 31, 1926, exceeded those for the corresponding periods of 1926 and 1925 by £362,775 and £521,366 respectively. On the other hand, as regards imports for the month of July, the value for 1927 only exceeds that for 1925 by about £37,000. As regards exports, the value for the first seven months of this year falls short of those for 1926 and 1925 respectively by £298,136 and £1,050,787. For the month of July, the value of exports in 1927 is less than the 1925 value by £222,254. Exports of imported merchandise, for the seven months ending July 31, 1927, were less by £78,791 than in 1926, and less by £200,219 than in 1925.

In regard to details, it is of interest (in view of the nitrogen products situation) that the weight of sodium nitrate imported in July, 1927, was 95,715 cwt., as compared with 10,788 cwt. in July, 1925. In regard to imports, the section of painters' colours and materials forms a specially bright spot, as the imports are steadily decreasing. Exports of sulphuric acid show strange fluctuations: for the month ended July 31, the values of exports in 1925, 1926, and 1927 were £1,476, £3,382, and £4,429 respectively, while for the seven months ended July 31, the corresponding figures were £18,036, £37,399, and £18,393. The value of ammonium sulphate exports is still below that of 1925; it is, however, of interest that exports to Japan for the first seven months of the year have increased from £246,884 in 1925 to £430,192 in 1927, and it is clear that this market is developing very well. Exports of sodium carbonate, etc., have increased in value from £941,023 in the first seven months of 1925 to £999,909 in 1927. For the first seven months of the year, the value of dyestuffs exports is less than those of 1926 and 1925, but for the month of July there is an increase on 1925 and a decrease on 1926. In the export section painters' colours and materials again command attention, the total value of exports being greater than those in either 1925 or 1926, though the quantity of material exported is only slightly greater than in 1925 and much less than in 1926.

The Chemical Engineering Transactions

In assessing the value of the activities of any learned society, particular attention must be paid to its publications. The Institution of Chemical Engineers, which has just published the fourth volume (1926) of its *Transactions*, seems to have realised this: for, both as regards the matter published and the style of publication, the volume, like its predecessors, is a credit to those responsible for it. The volume opens with a collection of the portraits of the honorary officers and council of the institution, for the reproduction of which posterity (always justly curious) will be grateful. The papers include those presented in the symposium on corrosion, which was held at the Congress of Chemists in 1926, to which Mr. U. R. Evans, Mr. P. Parrish, Dr. W. H. Hatfield, and Messrs. T. G. Elliott and G. B. Willey contributed. A paper on "Sugar from Wood," by Dr. W. R. Ormandy, one on "Experiences with Alcohol Motor Fuels," and one on "A New Plant for Fat Extraction by Solvents," by Mr. L. J. Simon and Professor J. W. Hinchley, all of which papers were read before the Congress of Chemists, are also now published. Furthermore, there are the papers which were presented at last year's conference on statistical methods in relation to industrial efficiency, namely, "The Control of Chemical Plant Operation by Statistical Methods," by D. Rider and T. C. Finlayson, and "Statistics in Industry: Some Uses and Limitations," by H. C. Marris. The value of conferences becomes more than usually obvious when the collected papers and discussion can be examined together.

Of great importance is an extract from the report of the board of examiners on the examination for Associate-Membership of the Institution, June–July, 1926. This extract (published as an appendix to the *Transactions*) ought to be studied very carefully by those responsible, either wholly or in part, for the training of students in chemical engineering. As the report says, the fact "that the field which a chemical engineer may cover is so wide that none can hope to be expert or even proficient in all branches of it, makes it the more important that some standard should be set up. That standard should be based upon a

thorough knowledge of fundamentals and a capacity to apply fundamentals rather than upon an empirical knowledge of a narrowly specialised branch of the subject." The examiners were somewhat disappointed by the manner in which the students dealt with the questions, and state that " the fundamental knowledge is itself lacking, and that where acquaintance with methods of industrial operations or of plant was shown, it was a somewhat superficial and empirical knowledge of the particular operations with which the candidate chanced to be professionally connected."

The very recognition of the existence of a problem is the beginning of its solution. The criticism offered by the examiners will no doubt have its due effect on the outlook of future candidates and those responsible for their training. It is clear that the examinations of the Institution will serve a double purpose: not only will they indicate a standard of qualification, but, when the results are skilfully analysed, they will show in what directions our methods of training need strengthening, and thus contribute in the most direct way to the efficiency of our chemical industry.

An American Estimate of Us

An estimate of British chemical trade and prospects, by Mr. H. S. Fox, the U.S.A. assistant trade commissioner in London, deals for the most part with familiar problems, and seems well-balanced in its judgment. There can be little doubt, in his opinion, that international understandings between Imperial Chemical Industries and similar groups in other countries can only be a matter of time, and the view is expressed that the chief strength of the merger lies in explosives, dyestuffs, and heavy chemicals. The effects of last year's strike are not, to an outside observer, so marked as they might have been expected to be, and in spite of the stoppage a number of developments are noted. Comment, for example, is made on the important progress made in the production of vat colours. While admittedly the dyestuffs industry has been strengthened by the inclusion of the British Dyestuffs Corporation in Imperial Chemical Industries, attention is drawn to the rather large sum still spent on imported dyestuffs and to the danger arising from over-production throughout the world. In view of the growth of the synthetic nitrogen industry, the view is taken that if nitrate of soda is to continue to maintain its position in the fertiliser industry some early and definite action in its favour must be taken. The writer notes the important recent developments in the perfection of new types of lacquers or cellulose varnishes in Great Britain, and predicts that British firms will continue active in the development of these and similar products. In this connection, some importance is attached to the formation of the Research Association of the British Paint, Colour, and Varnish Manufacturers, which by the way celebrates the opening of its new laboratory at Teddington next month. Finally, mention is made of the advances made in standardisation work under the British Engineering Standards Association. Perhaps the most notable feature of the review of a period that includes so much industrial trouble is the entire absence of anything resembling pessimism concerning the prospects of British chemical industry

Potash from the Dead Sea

To the information, published in our issue of August 6, relating to the chemical exploitation of the Dead Sea, a small but important addition may now be made. The Colonial Office is unable to divulge the names of parties with whom negotiations are in progress, but it is now known that they represent British interests, and it is understood that the negotiations have reached an advanced stage. All original tenders, it appears, submitted to the Crown Agents some two years ago proved to be unsatisfactory and were rejected. The British principals with whom negotiations are now taking place have yet to agree to certain conditions before any concession can be granted, and in addition the consent of both the Palestine and the Transjordan Governments is necessary. An agreement on principle is understood to have been reached, and certain questions of detail alone remain to be decided. The prospects are that before very long a definite announcement of the grant of a concession will be made, and it will be a matter of great satisfaction to know that it has been granted to British interests. From the chemical point of view, the project is one of immense importance. If successful, it would give this country an independent source of potash supplies, as well as of other chemicals, and the provision of the necessary chemical plant alone is an item of considerable interest to plant manufacturers and chemical engineers.

A Premature Rumour

The announcement of the production by the I. G. Farbenindustrie of a synthetic petrol has been succeeded by a rumour that the German organisation were negotiating with the British Dyestuffs Corporation for the purchase of works at Huddersfield where they proposed to work the new process. The rumour never seemed very probable, and it is no surprise to find it reported to be without foundation. There did not seem to be any particular reason why Huddersfield should be selected as a coal treatment centre or why a dyestuffs works should be specially suitable for the purpose. Applications for information have been made to branches of I.G. Dyestuffs, Ltd., apparently under a misapprehension. This company was formed some time ago as a British sales and distribution company for the handling of German chemicals and dyestuffs, and has nothing to do with manufacturing. The German experiments, so far as is known, have been mainly concerned with lignite, the brown coal that is plentiful in certain parts of Germany, and in the treatment of British coal of quite another quality certain modifications would seem to be inevitable.

As we go to press, we learn that an inquiry at the Frankfort headquarters of the I.G. has elicited the statement that the rumour is absolutely without foundation.

The Calendar

Aug. 28–Sep. 3	International Industries Fair.	Leipzig.
Aug. 31–Sep. 1	British Association for the Advancement of Science.	Leeds.

Chemical Trade Returns for July

Decrease in Imports and Exports

THE Board of Trade Returns for the month of July state that during the month the value of imports of chemicals, drugs, dyes and colours amounted to £1,109,836, a decrease of £179,024 as compared with the corresponding month of 1926; exports amounted to £1,812,381, a decrease of £323,680; and re-exports of imported merchandise to £58,926, a decrease of £25,632. For the seven months ended July 31, 1927, the value of imports was £9,178,087, an increase, as compared with the corresponding period of 1926, of £362,775; exports amounted to £13,341,948, a decrease of £298,136; and re-exports to £545,862, a decrease of £78,791. The detailed returns are as follows:—

Imports

	Quantities. Month ended July 31, 1926.	Quantities. Month ended July 31, 1927.	Value. Month ended July 31, 1926. £	Value. Month ended July 31, 1927. £
CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Acetic .....tons	773	955	33,360	41,391
Acid Tartaric .....cwt.	4,432	2,848	21,248	14,109
Bleaching Materials ,,	4,199	10,041	6,286	8,845
Borax..... ,,	7,258	11,440	8,200	12,502
Calcium Carbide ... ,,	39,145	55,078	24,407	34,891
Coal Tar Products, not elsewhere specified value	—	—	175,643	25,267
Glycerine, Crude ...cwt.	—	34	—	150
Glycerine, Distilled . ,,	81	604	328	2,899
Red Lead and Orange Lead.....cwt.	4,392	4,825	7,666	8,317
Nickel Oxide ..... ,,	90	—	377	—
Potassium Nitrate (Saltpetre) .....cwt.	10,421	11,829	11,333	13,350
Other Potassium Compounds .....cwt.	43,008	91,702	26,677	53,076
Sodium Nitrate .... ,,	17,539	95,715	10,992	61,411
Other Sodium Compounds .....cwt.	112,853	54,489	68,645	31,450
Tartar, Cream of ... ,,	7,070	3,703	25,407	15,301
Zinc Oxide .....tons	1,086	1,090	38,275	35,197
All other sorts.....value	—	—	323,911	231,022
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts .....oz.	101,631	124,842	8,312	9,668
Bark Cinchona, etc. cwt.	1,583	1,942	5,863	7,972
Other sorts .....value	—	—	129,817	114,874
DYES AND DYESTUFFS, ETC.—				
Alizarine .....cwt.	312	30	17,031	1,106
Other Sorts ..... ,,	2,431	3,527	53,285	86,907
Cutch ..... ,,	3,662	3,528	5,571	5,399
Other Extracts .... ,,	3,186	1,944	11,095	6,885
Indigo, Natural .... ,,	57	—	1,373	—
Extracts for Tanning ,,	104,905	110,769	101,495	114,773
PAINTERS' COLOURS AND MATERIALS—				
Barytes, ground, and Blanc Fixe .....cwt.	74,808	71,994	17,438	15,873
White Lead (dry)... ,,	14,635	12,096	27,939	19,894
All other sorts ..... ,,	97,434	102,177	126,886	137,307
Total of Chemicals, Drugs, Dyes and Colours ....value	—	—	1,288,860	1,109,836

Exports

CHEMICAL MANUFACTURES AND PRODUCTS—				
Acid Sulphuric ....cwt.	1,907	8,429	3,382	4,429
Acid Tartaric ..... ,,	1,648	2,742	8,783	18,801
Ammonium Chloride (Muriate) .....tons	386	458	9,845	9,729
Ammonium Sulphate—				
To France .....tons	—	—	—	—
,, Spain and Canaries tons	7,949	10,928	84,275	105,113
,, Italy ..... ,,	195	107	2,336	1,000
,, Dutch East Indies tons	1,967	163	21,969	1,618
,, Japan ..... ,,	3,751	5,138	41,589	50,949
,, British West India Islands and British Guiana tons	1,451	614	16,017	6,149
,, Other Countries ,,	4,805	6,478	55,495	66,183
Total ..... ,,	20,118	23,428	221,681	231,012

	Quantities. Month ended July 31, 1926.	Quantities. Month ended July 31, 1927.	Value. Month ended July 31, 1926. £	Value. Month ended July 31, 1927. £
BLEACHING POWDER (Chloride of Lime) ..cwt.	33,749	31,183	16,539	13,384
COAL TAR PRODUCTS—				
Anthracene .....cwt.	—	—	—	—
Benzol and Toluol..galls.	272	296	47	34
Carbolic Acid .....cwt.	9,331	11,957	13,323	27,496
Naphtha .....galls.	3,534	730	347	119
Naphthalene .....cwt.	784	1,127	361	873
Tar Oil, Creosote Oil, etc. .....galls.	4,576,209	1,314,054	139,583	49,653
Other Sorts .....cwt.	51,648	122,941	27,697	47,471
Total .....value	—	—	181,358	125,646
COPPER, Sulphate of ..tons	1,530	3,163	33,694	71,553
DISINFECTANTS, ETC...cwt.	41,209	31,189	100,188	79,760
GLYCERINE, Crude ... ,,	10,179	1,287	31,635	4,153
,, Distilled ,,	28,999	2,382	125,256	12,810
Total ..... ,,	39,178	3,669	156,891	16,963
POTASSIUM COMPOUNDS—				
Chromate and Bichromate .....cwt.	1,916	1,466	3,792	2,998
Nitrate (Saltpetre) ,,	1,985	1,665	3,875	3,205
All other Sorts .... ,,	1,296	2,826	13,858	15,839
Total ..... ,,	5,197	5,957	21,525	22,042
SODIUM COMPOUNDS—				
Carbonate .....cwt.	442,080	503,418	137,748	151,953
Caustic..... ,,	140,165	156,336	100,475	111,812
Chromate and Bichromate.....cwt.	2,340	2,619	3,037	3,798
Sulphate, including Salt Cake .....cwt.	182,089	68,961	24,231	9,977
All other Sorts .... ,,	45,141	50,324	34,062	60,607
Total ..... ,,	811,815	781,658	299,553	338,147
ZINC OXIDE .....tons	123	99	5,519	4,214
All other Sorts ....value	—	—	325,932	245,102
Total ..... ,,	—	—	1,384,890	1,180,782
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts .....oz.	176,240	229,755	18,095	23,076
All other Sorts ....value	—	—	278,074	218,765
Total ..... ,,	—	—	296,169	241,841
DYES AND DYESTUFFS—				
Products of Coal Tar cwt.	6,279	6,535	57,272	55,191
Other Sorts ..... ,,	5,571	4,000	7,782	4,753
Total ..... ,,	11,850	10,535	65,054	59,944
PAINTERS' COLOURS AND MATERIALS—				
Barytes, Ground, and Blanc Fixe .....cwt.	8,493	923	3,140	434
White Lead (dry)... ,,	6,125	4,055	12,778	7,800
Paints and Colours, in paste form .....cwt.	59,191	47,176	133,145	103,130
Paints and Enamels Prepared (including Ready Mixed) .....cwt.	35,905	31,227	116,872	110,458
All other Sorts .... ,,	69,220	63,648	124,013	107,992
Total ..... ,,	178,934	147,029	389,948	329,814
Total of Chemicals, Drugs, Dyes and Colours ....value	—	—	2,136,061	1,812,381

Re-Exports

	Quantities Month ended July 31,		Value. Month ended July 31,	
	1926.	1927.	1926.	1927.
CHEMICAL MANUFACTURES AND PRODUCTS—			£	£
Acid Tartaric .....cwt.	97	243	554	1,667
Borax ..... ,,	510	100	574	104
Coal Tar Products..value	—	—	1,087	19
Glycerine, Crude ...cwt.	63	—	242	—
Glycerine, Distilled . ,,	—	—	—	4
Potassium Nitrate (Saltpetre) .....cwt.	42	43	58	68
Sodium Nitrate .... ,,	449	100	313	68
Tartar, Cream of ... ,,	542	313	2,102	1,326
All other Sorts .....value	—	—	20,716	11,829
DRUGS, MEDICINES, ETC.—				
Quinine and Quinine Salts .....oz.	15,443	11,369	1,663	1,186
Bark Cinchona ....cwt.	386	593	2,329	4,495
All other Sorts .....value	—	—	40,712	26,390
DYES AND DYESTUFFS—				
Cutch .....cwt.	1,492	643	2,322	1,020
Other Dyeing Extracts cwt.	468	447	2,051	2,050
Indigo, Natural .... ,,	17	55	569	1,513
Extracts for Tanning ,,	1,375	1,157	1,600	1,851
PAINTERS' COLOURS AND MATERIALS .....cwt.	1,376	1,144	5,525	4,698
Total of Chemicals, Drugs, Dyes and Colours ..value	—	—	84,558	58,926

Germisan and Uspulun

To the Editor of THE CHEMICAL AGE.

SIR,—In your issue of August 13 there appears an article entitled "Micro-Organisms in Chemical Industry—Part II (a).—Food Preparation and Preservation."

In the first part of this the author, Mr. G. Malcolm Dyson, Ph.D., A.I.C., deals with chemicals for seed treatment and leads up to mercurial compounds of which he mentions two in particular, namely, "Germisan" and "Uspulun."

We are the sole concessionaires for Great Britain and the Dominions for "Germisan," which is manufactured by the Saccharin-Fabrik A.G. vorm. Fahlberg, List and Co., Magdeburg-Suedost, whereas "Uspulun" is the product of another concern. Your contributor has apparently confused the manufacturers and attributes "Uspulun" to the Saccharin-Fabrik A.G. and "Germisan" to the Bayer Co.

As the perusal of this article may lead to numerous inquiries being directed to the wrong quarters, we shall be obliged if you will insert this correction so that "Germisan" inquiries may come to the correct firm, namely, ourselves. Thanking you in anticipation, we are, etc.

RONSHEIM AND MOORE.

11a, Wormwood Street, London, E.C.2.

Opening of Paint Research Association Laboratory

THE research station and laboratories of the Research Association of the British Paint, Colour and Varnish Manufacturers will be officially opened at an inaugural luncheon, to be held at the Clarence Hotel, Teddington, on Wednesday, September 21, at 1 p.m., which it is hoped will be attended by a number of distinguished guests. The laboratories at Waldegrave Road, Teddington, will be open for inspection by the Press at 12 noon on September 21.

New Oxygen Factories in France

THE Société L'Air Liquide has started on a programme of erecting new oxygen factories in various industrial centres in France at present remote from any of the company's existing factories. A factory in Rochelle has been in hand for a month; another in Mans has just been started; others will be started at Mulhouse and at Chalons-sur-Saône towards the end of the year. Several additional factories are in contemplation for 1928.

Chemistry and Agricultural Research

Notes on Sir A. D. Hall's Report

THE report on the work of the Intelligence Department of the Ministry of Agriculture and Fisheries for the two years 1924–26 (presented by Sir A. D. Hall), which has just been published (H.M. Stationery Office, pp. 86, 2s. 6d.), touches on a number of chemical points. In regard to the chemical branch of the agricultural advisory service it is stated that this, the oldest and most firmly established of the advisory services, has continued on the lines laid down in previous years. Advice is given chiefly on soils, manures, and feeding-stuffs, in the last-named being included home-grown foods. Most of the advisory chemists are now conducting soil surveys. It is very satisfactory to record that the method of mechanical analysis of soils now adopted internationally is based on the method elaborated at Bangor. Liming experiments under a joint scheme are carried out in most areas; a lime survey, in which the Oxford chemist is co-operating, is being conducted in Northamptonshire. In some cases the development of clean milk competitions and milk recording has in turn led to an increased number of chemical examinations of milk samples.

Work on Sugar Beet

The growth in the area under sugar beet has led to chemical work in several directions. In the first place, it has been sought to establish a uniform method of analysis of sugar beets for sugar content; in this work the chemist at Bristol has taken the lead. In the second place, attempts have been made to determine the weight and sugar content of the crop at different lifting dates; in this work the chemists at Cambridge and Oxford are co-operating. Experiments in manuring sugar beet are being undertaken at Bristol.

In connection with investigations by the Markets Branch of the Ministry several advisory chemists are co-operating in an inquiry into the changes which take place in the weight and quality of crops on storage; cereals and potatoes have been under investigation so far. Rothamsted Experimental Station is co-operating in the work by subjecting these crops to artificially varied humidity, temperature, and pressure in the laboratory.

Basic Slag

The committee appointed in 1920, "to consider the development and improvement of the manufacture of basic slag and the extension of its use" issued a fourth Interim Report in October, 1924. The Committee then announced the conclusion to which it had come, that the value of basic slag to the maker is so small in comparison with the value of steel that he is unable to modify his processes for the purpose of improving the slag. The process is determined solely by the steel-makers' requirements, and the farmer must accept the slag offered him or forgo its use. The Committee's activities have therefore since been devoted mainly to exploring possibilities for extending the use of basic slag.

Mond Gas By-Product Developments

THE announcement of extensive industrial developments by the South Staffordshire Mond Gas Co., at Dudley Port, and the manufacture of chemical products on big-scale lines, has given much satisfaction in the Birmingham district. Mr. W. E. Hale, managing director of the South Staffordshire Mond Gas Co., states that much research work has been done during the past three years, and consideration of the corrosive effect of acids and sulphur upon iron and steel work prompted the company to seek a paint with sufficient protective qualities to prolong the life of such structures. After intensive research work it was found that the employment of a blend of different varieties of bitumen in a colloidal state afforded improved protection.

Mr. Hale also points out that the production of synthetic chemicals in Germany and America by the combination of hydrogen and other gases with coal and other cheap raw material is assuming large proportions, particularly in the direction of oils, alcohols, acetic acid, formalin, and other products which form the starting-point for the manufacture of many fine chemicals and drugs. Considerable experimental work has already been done by the company's research department, and they are now proceeding to manufacture these intermediates on a large scale.

Reviews

LUBRICATION AND LUBRICANTS. A TREATISE ON THE THEORY AND PRACTICE OF LUBRICATION. By Leonard Archbutt and R. Mountford Deeley. London: C. Griffin and Co., Ltd. Pp. 650. 36s.

Anyone desirous of studying the progress that has been made in the theory and practice of lubrication during the last 15 years could not do better than make a diligent comparison between the 1912 (third) edition and the present 1927 (fifth) edition of the treatise under review. So great are the differences that the new volume, though constructed on the lines of the previous editions, must be regarded as a new volume rather than a new edition. The earliest chapters form an excellent abridged monograph of that part of physical chemistry relating to the theories of adsorption of polar and other bodies. The work of Langmuir, Adams, Rayleigh, Hardy, Bragg, and many others on thin films and surface forces is so admirably dealt with that the first four chapters would form an excellent monograph in themselves. The authors have been wise in getting the very best expert help on the chapters dealing with such specialised subjects as the sources, composition, and manufacture of mineral lubricating oils and on the properties and compositions of the same. The standard methods of testing of the I.P.T. and the B.E.S.A. are used, and this is important since unfortunately most of the testing of lubricating oil is of a highly empirical nature and only by the utilisation of standard methods can comparative results be obtained. The work on the testing of lubricants and bearing metals has been brought up to date, including the work of Deeley, Lanchester, Stanton and others, and much new material is introduced in relation to ball and roller bearings. The important subject of the recovery of lubricating oils is also adequately dealt with. The work is undoubtedly of the greatest value, and no oil chemist's library can be complete without it. The volume gives a good idea of the vast amount of research work both in theory and practice that has been carried out on the important and difficult subject of lubrication, but a close study of it leaves one with the feeling that a great gap exists in that so little of the study has been done upon oils, the history of which has been adequately recorded. Only by systematic work carried out on oils of known origin and refined by known means shall we settle that very important question of the relationship between the source of the oil and the quality of the product that it is possible to obtain from it.

W. R. O.

GOTTLOB'S TECHNOLOGY OF RUBBER. Authorised English Edition, translated and revised from the German (1925) Edition by Joseph L. Rosenbaum, M.Sc., M.I.Chem.E. London: Maclaren and Sons, Ltd. Pp. 350. 42s.

Kurt Gottlob, who died quite recently at an early age, was responsible, in conjunction with F. Hoffman, for the investigations leading up to the much-discussed "10^{-8}" Bayer accelerator patent, and these two men may be regarded as the originators of the rubber accelerator industry in Europe. This work, together with his well known investigations on synthetic rubber, stamp Gottlob as a rubber chemist of the very first rank, but his knowledge was by no means purely academic, his factory experience being diverse and considerable. As the modern literature on rubber manufacture is distinctly scanty, the present volume, ably translated by Mr. Rosenbaum, is most welcome. It consists of 350 pages of text, with numerous figures and illustrations of apparatus and machinery. With regard to the latter it is to be noted that in the English edition illustrations of typical English and American plant have, wherever practicable, been substituted for the Continental types depicted in the original.

Rubber science and manufacture are nowadays so highly specialised that one individual can scarcely be a master of all their branches, and conscious of this, the author obtained the collaboration in the writing of various chapters on special subjects of a number of well known experts. In the first section of the work ("General Technology"), the chapters on "The Examination of Raw Rubber" and "The Chemical Analysis of Vulcanised Rubber" are by Professor Kindscher, and that on "The Mechanical Testing of Soft Rubber" by Professor Alfred Schob. Dr. Schmelkes deals with accelerators. In the second part ("Selected Chapters on the Special Technology of Rubber"), the chapters on "Mechanical Rubber Goods," and on "Cut Sheet" are by E. Herbst and Dr. Gottlob, those on "Rubber Footwear" and "Tyres" by E. Herbst, those on "Heels and Soles" and "Proofings" by K. Miksch and the author. Dr. Dorogi and Dr. Gottlob deal with "Toys" and the latter with Ing. Ballog handles "Ebonite." The section on "Dipped Goods" is by the author. The "get up" of the volume is excellent, and all those concerned in its publication are to be congratulated on the results of their labours.

PHILIP SCHIDROWITZ.

CHEMISTRY. By Percy E. Spielmann, Ph.D., B.Sc., A.R.C.Sc., F.I.C., A.Inst.P. London: Ernest Benn. Pp. 80. 6d. (Benn's Sixpenny Library, No. 104.)

The aim of the series of books of which the one under review is a member is to provide a reference library to the best modern thought at the price of sixpence a volume. Dr. Spielmann has dealt with his subject under the following chapter headings:—"The Nature of Science and of the Scientific Mind"; "The Foundation of Chemistry"; "The Development of Chemistry from Alchemy"; "The Nature and Divisions of Chemistry"; "The Application of Chemistry to Human Affairs"; "The Modern Trend of Chemistry," and "The Future Direction of Chemical Progress." There is also a bibliography which should be useful to those who desire to pursue the subject further.

In a book of this type an author has to keep the balance between a number of conflicting policies: it is necessary to convey as much information as possible, while at the same time the presentation must be such as to attract the general reader and to enable him to correlate the subject with culture in general; while, finally, there is the difficulty of getting everything into 80 pages. Dr. Spielmann has succeeded in preserving the balance, and the result is a very readable little book which not only shows the scientific basis of the subject, but also its importance in human affairs and industry. Stress is laid on the attitude of mind required of those who work in this field. The concluding words of the book form a confession of scientific faith which deserves quotation: "The knowledge of the fundamental composition of matter, together with that of the inter-relationship between matter and energy, the understanding of the behaviour of colloidal substances, and the comprehension of biological chemical activities, will all co-operate in the elucidation of the very nature of life itself. The stage will be set and the actors ready for this most enthralling drama; and when, finally, the call of 'Author!' is made, Human Intelligence—whatever may be behind it—will take the curtain."

F.

REMINGTON'S PRACTICE OF PHARMACY. SEVENTH EDITION. By E. Fullerton Cook and Charles H. LaWall. London: J. B. Lippincott Co. Pp. 2090. 45s.

"Intended for the use of pharmacists and physicians, and as a textbook for students," this volume is described as a "treatise on the making, standardising, and dispensing of official, unofficial, and extemporaneous pharmaceutical preparations, with descriptions of medicinal substances, their properties, uses, and doses, and such other professional service in connection with community health as the pharmacist may be called upon to render." This is a rather large order to fill, but the editors seem to have carried out their task very effectively. There are long and comprehensive chapters not only on specifically pharmaceutical topics—such as technical operations in pharmacy, pharmaceutical preparations, and the responsibility of the pharmacist under the law—but also on organic and inorganic chemistry (in which the chemistry, preparation, and therapeutics of many substances are dealt with), on biological products, on toxicology and antidotes, on methods of analysis, etc. In addition, the economic, professional, and manufacturing aspects of the subject are also discussed at length. Many of the chapters have been prepared by leading American authorities. The book is, of course, based on American practice, but the fact that much of the ground covered is of very general interest ought to recommend it to readers in this country.

F.

Low Grade Fuels for Steam Generation

Example of Modern Coal Washing Practice

More attention than ever is now being concentrated on important sections of scientific principles in fuel utilisation, that is, coal washing and the burning of low grade material for steam generation. An interesting example of the possibilities in this connection is a recent installation of thirteen sets of "Turbine" forced draught furnaces which have been fitted on four different boiler plants at a group of collieries in the Pottery district. Previously the collieries were screening their coal down to 1¼ in. slack, and then washing this latter residue, although 75 per cent. of the ash is contained in 50 per cent. of the fuel which passed through a ⅜ in. screen. To-day, however, they are able to screen the 1¼ in. slack again to separate out all the small material below ⅜ in., which is then completely utilised in the steam boilers without difficulty, and to wash the coal between ⅜ in. and 1¼ in. The result is a much more efficient service from the coal washing plant, including better quality of washed nuts, peas, and beans, with, at the same time, the maintenance of full steam pressure.

The material passing through the ⅜ in. screen has an average analysis of 36 per cent. of fixed carbon, 25 per cent. of volatile matter, and 30 per cent. of ash, and is all burned without any trouble by the "Turbine" furnaces, which are fitted also with the new extension cleaning-out bridge at the back, by means of which part of the fire can be pushed on to a special 3-ft. dead-plate arrangement beyond the fires, while the rest of the ash and clinker is then pulled out. Afterwards the portion of the live fire on the extension piece is raked back, so that the fresh coal is lighted up almost immediately and there is little or no drop in the steam pressure, especially since it will be remembered that the use of forced draught steam jets in this way keeps the ash in a very loose and friable condition, so that cleaning out of the fires is rapidly accomplished.

Finally, it may be mentioned that because of the developments in steam generation practice one of the chief objections to coal washing no longer exists, since nearly all the residues can be burned at the boilers and a large area of settling "ponds" for the slurry is no longer necessary.

General Meeting of the Cyprus Asbestos Co.

The ordinary general meeting of the Cyprus Asbestos Co. Ltd., was held at Amiandos on July 30. Mr. F. C. Jenkins, managing director, who presided, said he was glad to be able to inform the shareholders that production continued to be maintained at double last year's figures. They were now steadily averaging 500 tons weekly, and expected to reach the estimated figure of 12,000 tons before the end of the season. Troubles and difficulties had been left behind. They had, moreover, an inexhaustible supply of ore, a good market for their products, and year by year an increasing margin of profit. In course of time a very strong position should be built up. The main factor in connection with production increases was the quantity of ore which could be produced by the quarries during the year. Development work in the quarries was expensive, and if indulged in beyond a certain point would entail capital expenditure which might be a burden later on. It was considerably cheaper to develop the quarries in a small way in the first instance and continue development by milling the overburden, although, of course, progress was slower than the more expensive method.

Vacant Appointments

A Lectureship in Agricultural Chemistry in the University of Reading. The Registrar. August 27.

A Junior Assistantship in Chemistry in the Agricultural Department, Marischal College, Aberdeen. £200-£10-£250. The Secretary, 41½, Union Street, Aberdeen. August 27.

A Lectureship in Biochemistry (Grade I) in the Physiological Department, University of Birmingham. £600. The Secretary. September 21.

A Drapers' Company's Research Scholarship in Dyeing. £100 per annum; a Joseph Blamires Research Scholarship (£100 per annum) and a British Dyes Research Scholarship (£75 per annum), both for research in colour chemistry. The Director of Education, The Technical College, Huddersfield.

The Dead Sea Concession

A Decision Expected Shortly

No definite information is yet obtainable regarding the granting by the Government of a concession for the exploitation of the salt resources of the Dead Sea.

In answer to inquiries this week at the Colonial Office an official told a representative of The Chemical Age, "We can give you no direct information because, a short time before the end of the Session, the Secretary for State was asked whether an announcement could be made on the subject, and in his reply stated that it was not in the public interest to make any statement at present—therefore we cannot give any information to private interests.

"Otherwise we should have been able to say with whom we are negotiating. Unless there is any point which may have to be referred back to Palestine there is no reason why an announcement should not be made within a few weeks."

In answer to further questions, it was stated that it was not permissible to say whether it was with British or American interests with whom negotiations were in progress.

At the office of the Crown Agents information was disclosed that the matter had reached the stage at which the agent of the Palestine administration had been requested to negotiate the details of the concession.

The Study of Industrial Poisons

Poisons affecting the eyes are multiplying industrial accidents, Mr. J. E. Hannum, research engineer to the Eyesight Conservation Council of America, declares in a report to the American Chemical Society. "This group of eye injuries," the report states, "is rapidly increasing in importance owing to the enormous increase in recent years in the production of dyestuffs and other chemicals, and the consequent growth of the chemical industry. Methanol is regarded as probably the most deadly industrial poison. Widely used in many industries, it is said not only to produce such serious effects upon the retina and optic nerve that total blindness almost invariably develops, but it may cause blindness if taken internally. Industrial groups exposed to the hazards of methanol include art-glass workers, artificial-silk makers, bronzers, celluloid makers, dimethyl sulphate makers, dye-makers, felt-hat makers, gilders, incandescent lamp makers, ink makers, japan makers, linoleum makers, perfume makers, shellac makers, soap makers, and methanol distillers. Lead and its compounds are among the most dangerous industrial poisons, for they produce, among other things, atrophy of the optic nerve, permanent blindness being the outcome of complete atrophy. Lead, it is said, demands special consideration because it is used in more than one hundred and twenty-five operations. Poisons were found to enter the body most frequently through the respiratory system in the form of gas, vapour, or dust. They may, however, enter by absorption through the skin, and in some instances they are carried into the body by food that has come in contact with the poison on the hands of the worker." "The big problem in safety work," the report adds, "is gaining the co-operation of the workmen."

Irish Free State Patents

Rayner and Co., patent agents, Chancery Lane, call attention to the new situation which will be created by the passing of the new Patents and Trade Marks Act in the Irish Free State. Previously, British patents and trade mark registrations have covered the whole of Ireland but, when the new Patent Act is in force, they will automatically cease to function in Saorstat Eireann. It is necessary, therefore, for all holders of British patents and trade marks desiring to retain protection in Southern Ireland to take out fresh patents or trade marks there. British patents, however, granted before December 6, 1921, will be continued upon the Irish Register if a copy of the patent is lodged in Ireland and renewal fees paid as in England, similar privileges applying to registered trade marks and designs. In the event of an application for a patent being made without reference to any earlier British patents, it must be accompanied by the report of a registered patent agent based upon a search for novelty in the British records.

From Week to Week

POLISH POTASH PRODUCTION in the first quarter of the current year amounted to 75,131 tons, while the home demand in the period was 79,326 tons.

MR. ROBERT GRAY, assistant gas manager of the Greenock Corporation, has been appointed as assistant to the managing director of the Kingston-on-Thames Gas Co.

THE DORR CO., of 247, Park Avenue, New York City, U.S.A., announce that Mr. A. Anable, for several years connected with the equipment sales department, has been appointed director of publicity.

THE OLD-ESTABLISHED FIRM of G. D. L. Swann and Son (carrying on business as chemical manufacturers and merchants at 129, West Graham Street) have been admitted to membership of the Glasgow Chamber of Commerce.

WORK WILL SHORTLY BE COMMENCED on a new chemical factory which is to be built on a site of forty-six acres at Darlington for the Chemical and Insulating Co., Ltd., a new company details of whose formation were given in last week's CHEMICAL AGE.

A REPORT ON ANTI-KNOCK INVESTIGATIONS, by A. Egerton, F.R.S. and S. F. Gates, has been issued in summarised form by the Aeronautical Research Committee as Reports and Memoranda No. 1079 (E.24), published by H. M. Stationery Office (pp. 13, 9d.).

CONSIDERABLE DAMAGE WAS CAUSED BY A FIRE last week at Hapton Chemical Works, occupied by John Riley and Sons. The fire started in the sulphur chamber and is thought to have resulted from sulphur becoming overheated and coming into contact with the earth.

MR. P. M. DEARLE, the officer in charge of the Natural Resources and Industrial Information Branch of the Office of the High Commissioner for Canada in London, sailed for Canada last Saturday in the company of the British delegates to the Second (Triennial) Empire Mining and Metallurgical Congress.

INDIGO EXPORTS FROM INDIA during May totalled 236 cwt. (as compared with 125 in 1926). Six cwt. went to the United Kingdom; 100 cwt. to Persia and Mesopotamia; 57 cwt. to Egypt; and 73 cwt. to other countries. In the period January–May, 1927, 748 cwt. was exported, as compared with 1,104 cwt. in the corresponding period of 1926.

DR. KEMPNER, the late chairman of the Potash Syndicate, has been replaced by a triumvirate, one member of which has also taken his place in the Reich Potash Council. The three members are Herren Korte, Rostberg, and Zirkler, representing the Burbach, Wintershall, and Salzdtfurth concerns respectively, which control about 80 per cent. of the Potash Syndicate quotas.

A PARTY OF METALLURGICAL STUDENTS will visit the Ruhr district shortly on a faculty tour arranged for the Inter-Varsity Metallurgical Association by the National Union of Students. The programme includes a reception by the Association of Ruhr Coal Workers at Essen, visits to technical schools, steel works, the bridge building Institution at Klönne, and the plant of the Minister Stein Mining Co.

THE LAND AND BUILDINGS of the former British-American Nickel Plant at Deschenes has been conveyed to Toronto interests, represented by Mr. G. C. Loveys, of Toronto, in virtue of a deed recently registered in Hull County registration office. The plant was built at the end of the war and refined nickel for two years, closing in 1924. It is expected locally that it will be used again for refining metals from the mining camps of Northern Ontario and Quebec.

DR. C. DUISBERG, of the I.G., was recently invested with the honorary degree of doctor in the faculty of evangelical theology of the University of Marburg. This is his eighth honorary doctorate, and his honorary degrees now cover all the faculties of German universities. He is a Dr.-Ing. of the Dresden Technical High School, a Dr. Med. of the University of Munich, a Doctor of State Science of the University of Bonn, a Doctor of Laws of the University of Cologne, a Doctor of Natural Science of the University of Tübingen, a Doctor of Agriculture of the Berlin Agricultural High School, and a Doctor of Natural Philosophy of the University of Heidelberg.

ARTIFICIAL SILK NEWS:—The Du Pont Rayon Co. (of America) announced recently that it will begin immediately the construction of a third rayon producing unit at Old Hickory, Tennessee, which will cost $5,000,000. The total annual output of the Du Pont concerns will be increased from 20,000,000 lb. to 25,000,000 lb. annually.—The Viscose Co. is expanding its Roanoke works and is starting a new works at Parkersburg, West Virginia, which means that the company will be able to produce about 50,000,000 lb. of rayon per year.—The Tubize Co. is said to be planning an extension from 7,000,000 lb. to above 10,000,000 lb. a year, and the Celanese Corporation is scheduled to double its annual production of 3,000,000 lb. —The above-mentioned developments are not interfering with the plans of the American Bemberg Corporation, which has a cuprammonium plant operating at 2,500,000 lb., and is said to be about to add another unit of equal capacity.

THE RECENT ISSUE of 1,100,000 ordinary shares, offered at 1s premium to ordinary shareholders of the Ship Canal Portland Cement Manufacturers, has been heavily over-subscribed.

THE KALI-INDUSTRIE A. G. proposes to operate a potassium nitrate unit at Rauxel, working under Claude ammonia synthesis patents, rights in which have recently been assigned to them.

THE AMALGAMATION IS ANNOUNCED of the General Chromium Corporation, the Vacuum Can Co., and certain subsidiaries of the Union Carbide and Carbon Co. for the exploitation of electro-plating with chromium.

THE BRITISH MATCH CORPORATION, LTD., with a capital of £6,000,000, which is to acquire and hold the shares of Bryant and May, Ltd., and J. John Masters and Co., Ltd., has now been registered. Details are given on another page.

AN AGREEMENT HAS BEEN REACHED between the Soviet Government and the Stockholm Superphosphate Co., whereby the latter will erect and operate a works near Nijni-Novgorod, which will have an annual capacity of 30,000 tons of cyanamide.

DR. C. F. ELAM, who recently obtained a scholarship enabling her to attend the Empire Mining and Metallurgical Congress in Canada, left England on Saturday, August 13. She is the only woman member of a British delegation numbering about 250.

RECENT WILLS INCLUDE: Mr. D. A. Gilchrist, recently professor of agriculture, Armstrong College, Newcastle, £22,442; Mr. Samuel Henry Smith, of Bude, who produced one of the first anti-gas compounds for use in the earlierforms of gas masks during the war, £4,045 (net personalty, £3,222).

SUGAR BEET NEWS.—The site for the new Bedfordshire beet sugar factory has been definitely fixed at Blunham, six miles east of Bedford, and the factory will be erected in the autumn. The company is arranging a sugar contest for all farmers growing ten acres or more of sugar beet for them next year.

SPACE BOOKED FOR THE BIRMINGHAM SECTION of the British Industries Fair in 1928 is 5,400 square feet in excess of the total space occupied by the entire exhibition in that city last February. An arrangement has been completed with the Birmingham Chamber of Commerce under which the site of the exhibition building is definitely secured for fifteen years ahead.

THE USE OF CHEMICALS IN THE BLEACHING of flour was condemned at the seventeenth annual conference of Bakers' Operatives at Birmingham this week as being injurious to bakery workers and to the public, and the Home Office was called upon to prohibit their use. It was stated that bakers viewed these substances with suspicion, it never having been shown whether or not they were responsible for the spread of dermatitis.

IMPORTANT DEVELOPMENTS ARE NOW TAKING PLACE in the Russian chemical industry, and it is stated that considerable extensions of plant have already been arranged. More than £3,000,000 is to be spent during the present economic year on these developments. The money is to be divided as capital expenditure between the three largest Russian chemical concerns—the Northern Chemical Trust, the Chemico-Coal Trust, and the Moscow Heavy Chemical Trust. These three concerns will not only increase their present manufacture of chemicals, but will install plant for the production of various chemicals which have had to be imported in the past.

UNIVERSITY NEWS.—*Leeds*: Mr. Arthur Jackson, B.Sc., has been awarded a Leeds University Scholarship and also a Research Scholarship to the value of £140, for two years, by the Department of Scientific and Industrial Research.—*Cambridge*: Mr. John D. Bernal, B.A., of Emmanuel College, has been appointed University Lecturer in Structural Crystallography for three years from next October 1.—*Bristol*: Dr. C. L. Walton, adviser in agricultural entomology in the University College of North Wales, has been appointed Research Entomologist (Grade I) at the Long Ashton Research Station. This also carries the title of Lecturer of Entomology at the University.

THE FOLLOWING MONOGRAPHS, being theses presented for various degrees of the University of Illinois, have been received: "Polyhydroxyanthraquinones—Synthesis of Rufiopin, Hydroxyanthrarufin, and 1:2:7:8-Hydroxyanthraquinone," by S. V. Puntambeker; "The Highly Unsaturated Acids of Menhaden Oil," by R. R. McGregor; "The Oxidation of Pyrites as a Factor in the Spontaneous Combustion of Coal," by Sheo-Hen Li; "Studies on the Precipitation of Calcium, Magnesium, and Aluminium," by W. U. Gallaher; "The Relation of Hydrogen-Ion Concentration to the Properties of Alum Floc," by G. P. Edwards; "Observations on the Rare Earths: The Preparation and Properties of Metallic Yttrium," by A. P. Thompson; "The Vapour Pressures and Thermal Properties of Potassium and Some Alkali Halides," by E. F. Fiock; and "Studies on the Quantitative Determination of Anthraquinone Derivatives in Cathartic Drugs," by M. C. Tumminkatti.

Obituary

MR. JOSEPH GASKELL, late of Howarth's Buildings, Cross Street, and Cheetham Hill, Manchester, on August 11.

JUDGE ELBERT H. GARY, chairman and chief executive officer of the U.S. Steel Corporation, on Monday, aged 80 years.

References to Current Literature

British

ADSORPTION.—The heat of adsorption of gases by charcoal. S. J. Gregg. *J. Chem. Soc.*, July, pp. 1494–1512.

COLLOIDS.—The action of X-rays on colloids. J. A. Crowther and J. A. V. Fairbrother. *Phil. Mag.*, August, pp. 325–335.

GENERAL.—The chemical reactions of synthetic perfumes. T. H. Durrans. *Perfumery and Essent. Oil Rec.*, August (special number), pp. 307–334.

The combination of nitrogen and hydrogen activated by electrons. A. Caress and E. K. Rideal. *Proc. Roy. Soc. A.*, August 2, pp. 684–700.

The effect of radon on the solubility of lead uranate. K. C. Bailey. *Phil. Mag.*, August, pp. 404–407.

The constitution of ordinary lead. F. W. Aston. *Nature*, August 13, p. 224.

Helium compound. D. M. Morrison. *Nature*, August 13, p. 224.

ORGANIC.—Low temperature oxidation of hydrocarbons. J. S. Lewis. *J. Chem. Soc.*, July, pp. 1555–1572.

A synthesis of safrole and *o*-safrole. W. H. Perkin, jun., and V. M. Trikojus. *J. Chem. Soc.*, July, pp. 1663–1666.

PHYSICAL.—The electroendosmosis of aqueous solutions through a diaphragm of sintered glass powder. F. Fairbrother and H. Varley. *J. Chem. Soc.*, July, pp. 1584–1589.

A new method for measuring vapour densities. P. Blackman. *Chem. News*, August 12, pp. 97–100.

United States

ADSORPTION.—Adsorption from solution by ash-free adsorbent charcoal. III. A comparison of results obtained with ash-free and impure charcoal. E. J. Miller. *J. Phys. Chem.*, August, pp. 1197–1211.

CATALYSIS.—Fifth report of the committee on contact catalysis. E. E. Reid. *J. Phys. Chem.*, August, pp. 1121–1149.

The rate of transformation of acetylchloroaminobenzene into *o*- and *p*- chloroanilides as a measure of the catalytic power of hydrochloric acid. F. G. Soper. *J. Phys. Chem.*, August, pp. 1192–1196.

The catalytic activity of metallised silica gels. I. The hydrogenation of ethylene. V. N. Morris and L. H. Reyerson. *J. Phys. Chem.*, August, pp. 1220–1229.

COLLOIDS.—The function of water present in silicic acid gel. The structure of silicic acid gel. H. A. Fells and J. B. Firth. *J. Phys. Chem.*, August, pp. 1230–1236.

The drop number and emulsifiability. R. C. Smith and J. C. Dow. *J. Phys. Chem.*, August, pp. 1263–1266.

The swelling of isoelectric gelatin in water. I. Equilibrium conditions. J. H. Northrop. II. Kinetics. J. H. Northrop and M. Kunitz. *J. General Physiology*, July 20, pp. 893–904, 905–926.

ELECTROCHEMISTRY.—The electrode potentials of beryllium, magnesium, calcium, strontium, and barium from thermal data. W. M. Latimer. *J. Phys. Chem.*, August, pp. 1267–1269.

GENERAL.—Absorption of ultra-violet light by paint vehicles. G. F. A. Stutz. *Ind. Eng. Chem.*, August 1, pp. 897–901.

OILS.—Effect of foreign oleaginous seeds, when crushed with flax seed, on the drying and bodying properties of linseed oil. W. H. Eastman and W. L. Taylor. *Ind. Eng. Chem.*, August 1, pp. 896–897.

Action of cathode rays on drying oils. J. S. Long and C. N Moore. *Ind. Eng. Chem.*, August 1, pp. 901–903.

Action of heat and blowing on linseed and perilla oils and glycerides derived from them. J. Long, W. S. Egge, and P. C. Wetterau. *Ind. Eng. Chem.*, August 1, pp. 903–906.

PLANT.—Repairing sulphuric acid chamber bottom during operation. W. C. Kendrick and M. E. Souder. *Ind. Eng. Chem.*, August 1, pp. 954–955.

SEWAGE.—Estimation of organic matter in sewage and effluent. Modification of Adeney's acid dichromate method. W. E. Abbott. *Ind. Eng. Chem.*, August 1, pp. 919–921.

German

ANALYSIS.—Colour reactions for magnesium. W. J. Petraschenj. *Z. anal. Chem.*, Vol. 71 (8), pp. 291–297.

The salts of the halogeno-acids of cadmium and bismuth with organic bases and their analytical application. R. Berg and W. Otto. *Berichte*, July 13, pp. 1664–1671.

The identification of iodides and bromides and their detection in the presence of one another. J. von Mikó. *Archiv. der Pharm.*, June, pp. 445–450.

CATALYSIS.—On the kinetic laws of homogeneous catalysis. Experimental investigation of the inner mechanism of a homogeneous catalytic reaction. E. Spitalsky and N. Koboseff. *Z. physik. Chem.*, July, pp. 129–177.

ELECTROCHEMISTRY.—The electrochemistry of solutions of aluminium bromide in nitrobenzene. W. A. Plotnikow and M. A. Bendetzsky. *Z. phys. Chem.*, July, pp. 225–232.

GENERAL.—The calculation of theoretical combustion temperatures. P. Droszbach. *Z. Elektrochem.*, August, pp. 349–350.

The manufacture of bromides and iodides. F. Chemnitius. *Chem.-Zeit.*, August, pp. 587–588; August 10, pp. 608–609.

INORGANIC.—The transformation of sodium chromate into sodium bichromate by carbonic acid. H. Pincass. *Continental Met. Chem. Eng.*, August, 233–235 (in English).

ORGANIC.—On the catalytic decomposition of hydrogen peroxide by haemin. H. v. Euler and K. Josephson. *Annalen*, July 16, pp. 111–126.

On substitution and addition. J. Meisenheimer. *Annalen*, July 16, pp. 126–151.

The isolation of a monomethylether of vinylcatechol from beechwood tar. A. Fromm. *Annalen*, July 16, pp. 168–177.

PHYSICAL.—On a very general time law of chemical kinetics and its significance. The velocity of hydrolysis of organo-oxides. A. Skrabal. *Z. Elektrochem.*, August, pp. 322–348.

Density and temperature. VI. W. Herz. *Z. Elektrochem.*, August pp. 348–349.

Miscellaneous

ANALYSIS.—The application of spectral analysis to the investigation of metallic impurities. E. Bayle and L. Amy. *Comptes Rendus*, July 25, pp. 268–270 (in French).

The determination of tin by cupferron: separation from antimony, arsenic, lead, and zinc. A. Pinkus and J. Claessens. *Bull. Soc. Chim. Belg.*, June, pp. 413–433 (in French).

APPARATUS.—The utilisation of water-jet pumps in the absence of the delivery of water under pressure. C. Tourneux. *Bull. Soc. Chim.*, June, pp. 812–814 (in French).

GENERAL.—Active carbon in the sugar industry. C. Mangold. *Osterreichische Chem.-Zeit.*, July 15, pp. 127–128 (in German).

Hydrogenation at high temperature, and under high pressure of hydrogen, in the presence of non-hydrogenating catalysts. I. Application to naphthalene and anthracene. A. Kling and D. Florentin. *Bull. Soc. Chim.*, June, pp. 864–881 (in French).

INORGANIC.—Basic beryllium carbonate. F. Taboury. *Comptes Rendus*, July 25, pp. 275–277 (in French).

ORGANIC.—Contribution to the study of marine animal oil. Investigations on the unsaturated aliphatic alcohols of spermaceti oil. E. André and M. T. François. *Comptes Rendus*, July 25, pp. 279–281 (in French).

The action of organo-magnesium derivatives on α-trisubstituted primary amides. Ramart, Laclôtre, and Anagnostopoulos. *Comptes Rendus*, July 25, pp. 282–284 (in Erench).

PHYSICAL.—The ebullioscopic determination of the molecular equilibria of resorcinol in aqueous solutions of potassium chloride. F. Bourion and E. Rouyer. *J. Chim. Phys.*, July 25, pp. 437–469 (in French).

The kinetics of ozonisation under the action of α-particles. W. Mund and J. D'Olieslager. *Bull. Soc. Chim. Belg.*, June, pp. 399–412 (in French).

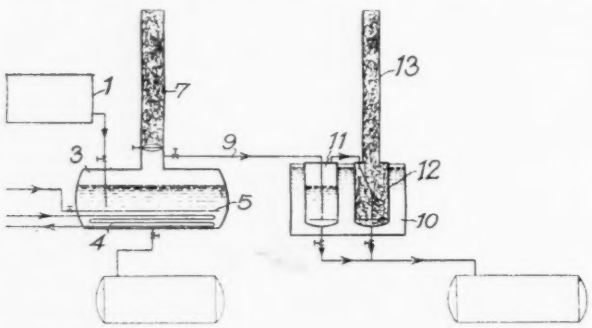
Patent Literature

The following information is prepared from published Patent Specifications and from the Illustrated Official Journal (Patents) by permission of the Controller to H.M. Stationery Office. Printed copies of full Patent Specifications accepted may be obtained from the Patent Office, 25, Southampton Buildings, London, W.C.2, at 1s. each.

Abstracts of Complete Specifications

273,832. Ozonides of Hydrocarbons. Process of Producing. A. S. Ramage, 7644, Woodward Avenue, Detroit, Mich., U.S.A. Application date, April 13, 1926.

This process comprises the treatment of an olefine hydrocarbon of the general formula C_nH_{2n} with ozone or ozonised air. The product is a mixture of two substances, one of which appears to be a simple ozonide of the starting material which it resembles in physical properties, while the other appears to be ozonide of an oxidation product of the starting material and has a higher boiling point. The two products have the property of liberating nascent oxygen in the presence of moisture. The process is particularly suitable for obtaining substitutes for turpentine, drying oils, and resins. If



273,832

the hydrocarbon treated is too volatile, the ozonide product may be too volatile for use in paints and varnishes, or if highly volatile paraffin hydrocarbons are present in the starting material these are little affected by the ozonising treatment and their presence in the product render it unsuitable for use in paints and varnishes; further, the starting material should not contain high boiling hydrocarbons, the presence of which is undesirable in paints and varnishes. Suitable mixtures are those containing olefines with a relatively small proportion of terpenes and aromatic hydrocarbons, and not more than 10 per cent. of paraffin hydrocarbons and particularly those fractions of such mixtures which distil at 125°–250° C.

The hydrocarbon mixture passes from a vessel 1 to a still 3 having a heating or cooling coil 4 which maintains the temperature at about 80° C. Ozonised air is introduced into the pipe 5 and the vapour passes into a reflux column 7 or through the pipe 9 to a condenser 10. The column 7 is used if a larger proportion of the higher boiling product is desired for use as a linseed oil substitute. If it is desired to obtain a turpentine substitute, the condenser 10 is employed. It is found that a temperature of 30°–40° C. below the boiling point of the hydrocarbon under treatment is most suitable. If a low boiling hydrocarbon such as amylene is treated, refrigeration instead of heating is necessary. The condenser 10 comprises a bubbling tank 11, and a tank 12 filled with steel-wool, or other contact material, provided with a reflux column 13 also filled with contact material. The tanks 11, 12 are surrounded with a cooling jacket. The process is continued until the residue in the still is of about 20° Bé. and it is then suitable as a linseed oil substitute. If the ozonisation is continued, the residue in the still becomes semi-solid when cold, and is soluble in alcohol and other spirits, saponifiable with alcoholic soda, does not combine with litharge, and is a good substitute for resins in the manufacture of varnish. The linseed oil substitute does not harden when ground with active pigments or colours, and the paints so formed may be kept for a long period without forming a skin, while they will dry in 5–6 hours. The lighter product will dry linseed oil three times as rapidly as turpentine.

273,841. Sulphur from the Sulphates of Earth Alkalies, Process of Obtaining. Salzwerk Heilbronn Akt.-Ges., Heilbronn on Neckar, Germany, and T. Lichtenberger and K. Flor, Salzgrund 1, Heilbronn on Neckar, Germany. Application date, April 16, 1926. Addition to 251,942 (see The Chemical Age, Vol. XV, p. 88).

Specification No. 251,942 describes the production of sulphur by dissolving alkaline earth sulphates in fused sodium chloride, and then adding coke to reduce the sulphate to sulphide. The latter is then decomposed by blowing steam or acid into the alkaline earth oxide or the corresponding salt to obtain sulphuretted hydrogen which may be converted into sulphur or sulphur compounds. It is now found that the sodium chloride may be replaced by other alkali or alkaline earth salts or mixtures, if they are fusible without liberating water and are inert towards the alkaline earth sulphates. Alkali sulphates and alkali or alkaline earth fluorides are suitable. If fluorspar is used, it may be mixed with alkali or alkaline earth fluorides to lower the melting point. A mixture of alkali or alkaline earth fluorides or alkaline earth chlorides and alkaline earth sulphates may also be used.

273,883. Ferric Sulphate, Manufacture of. B. Hart and Harris, Hart and Co., Ltd., 17, Cooper Street, Manchester, and Refiners, Ltd., 3, Parsonage, Manchester. Application date, June 12, 1926.

The process is for the manufacture of ferric sulphate from waste materials such as the oxidised iron borings obtained in the manufacture of aniline, the ferric sulphate being obtained in a condition suitable for the purification of benzol. The material containing ferrous and or ferric oxides and or hydrated oxides is treated with sufficient sulphuric acid to render the iron contents soluble. The amount required is about one-third of that required to convert the whole of the iron into persulphate in addition to that necessary to neutralise any lime in the waste. The remainder of the sulphuric acid necessary is then added, and an oxidising agent such as nitric acid, sodium nitrate, or manganese dioxide is also added. The ferric sulphate is obtained as a finely divided precipitate, and may be dried and ground. The product is less cohesive and more easily ground than that obtained when the reaction is carried out in one stage only, and is particularly suitable for the purification of benzol or petrol.

273,923. Aromatic Amines and Derivatives Thereof, Process for Preparing. British Dyestuffs Corporation, Ltd., R. W. Everatt, and E. H. Rodd, 70, Spring Gardens, Manchester. Application date, August 25, 1926.

The process is for treating mixtures of secondary and tertiary aromatic amines with phosgene to effect their separation. It has been found that if the reaction is conducted in the presence of water, it is possible to work with mixtures richer in secondary amines, since the hydrochloride of the amine which is formed and which is not acted upon by phosgene, is dissolved in the water and the base can be again set free by the gradual addition of alkali. The addition of alkali is only necessary when the proportion of secondary base is above 25–30 per cent.

In an example, a mixture containing 40 per cent. of mono- and 60 per cent. of diethylaniline is mixed with about an equal quantity of water, and phosgene is passed in at a temperature below 15° C. Caustic soda or sodium carbonate is slowly added, keeping the solution always acid. After all the mono-ethylaniline has reacted, hydrochloric acid is added to dissolve the diethylaniline, and the phenylethylcarbamyl chloride is filtered off and washed with dilute hydrochloric acid. Diethylaniline containing less than 1 per cent. of mono-ethylaniline is recovered from the filtrate, and the phenyl-ethylcarbamyl chloride may be hydrolysed to obtain pure mono-ethylaniline.

(*Continued on page* 173)

(Continued from page 172)

273,999. CONVERTING HIGH-BOILING HYDROCARBONS, WHICH HAVE BEEN FREED FROM THE SUBSTANCES SOLUBLE IN LIQUID SULPHUROUS ACID, INTO LOW BOILING HYDROCARBONS BY MEANS OF ALUMINIUM CHLORIDE, PROCESS FOR. Allgemeine Ges. für Chemische Industrie m.b.H., 33, Unter den Linden, Berlin, W.8, Germany. International Convention date, September 17, 1926. Addition to 272,433.

Specification No. 272,433 (see THE CHEMICAL AGE, Vol. XVII, p. 62) describes the conversion of high boiling hydrocarbons free from constituents soluble in liquid sulphurous acid into low boiling hydrocarbons by splitting with aluminium chloride. A small quantity of aluminium chloride is first used, and the residue again treated with liquid sulphurous acid which removes the products which oppose or delay the decomposition with aluminium chloride. The second residue may be treated in a similar manner, and so on. In the present invention, sulphuric acid replaces sulphurous acid in the second and subsequent treatments. The sulphuric acid used can only be regenerated with a considerable reduction in value.

NOTE.—Abstracts of the following specifications which are now accepted, appeared in THE CHEMICAL AGE when they became open to inspection under the International Convention :—249,156 and 249,501 (I.G. Farbenindustrie Akt.-Ges.), relating to production of liquid hydrocarbons from mineral oil and bitumens, see Vol. XIV, pp. 527 and 550; 250,909 (I.G. Farbenindustrie Akt.-Ges.), relating to azo dyestuffs and lakes, see Vol. XV, p. 34; 250,968 (I.G. Farbenindustrie Akt.-Ges.), relating to derivatives of the anthraquinone series, see Vol. XV, p. 35; 253,507 (A. J. Kling and J. M. F. D. Florentin), relating to light hydrocarbons from heavy cyclic hydrocarbons, see Vol. XV, p. 209; 263,853 (Grasselli Chemical Co.), relating to aldehyde amine condensation products, see Vol. XVI, p. 264.

International Specifications not yet Accepted

272,526. DESTRUCTIVE HYDROGENATION. J. Trautmann, 33, Halskestrasse, Sudende, Berlin. International Convention date, June 11, 1926.

Coal is distilled, and the gases freed from sulphur compounds and then treated in a separate chamber with the hydrogenating gas in the presence of zinc, nickel, or tin in the form of powder or vapour. Superheated steam, watergas, carbon monoxide, hydrogen, etc., may be added to the gas to promote hydrogenation.

272,528. PERYLENE COMPOUNDS. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, June 9, 1926.

Perylene carboxylic acids, their derivatives and substitution products can be decarboxylated to any desired degree by heating under pressure in aqueous solution or suspension in the presence of an acid-binding agent or by heating the salts under pressure in neutral or alkaline solution. Excess of alkali has the same effect as increase of temperature or concentration. Examples are given of the treatment of perylene-3 : 4 : 9 : 10-tetracarboxylic acid to obtain the 3 : 4 : 9-tricarboxylic acid, the 3 : 9- or 3 : 10-dicarboxylic acid, the 3-monocarboxylic acid, or perylene. The corresponding mono-imide yields either the 3 : 4-dicarboxylic acid imide or a dicarboxylic acid. In the case of chlorinated perylene carboxylic acids, the chlorine is usually replaced by hydroxyl groups.

272,538. DESTRUCTIVE HYDROGENATION. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, June 11, 1926.

The liquid products are condensed out of the gases, and the remaining gases are then scrubbed with a benzene obtained by the destructive hydrogenation. The dissolved gases are liberated by reduction of pressure or increase of temperature. The hydrogen which is first obtained is compressed and used again in the hydrogenation process.

272,539. CRACKING OILS, ETC. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, June 11, 1926.

Oil is admitted to the reaction vessel through passages *a* and collects on a porous septum *b* of sintered glass powder, quartz, earthenware, metals, charcoal, etc., while the hydrogenating gas is passed upwards through it, thereby ensuring good contact. Alternatively, the oil is admitted through a pipe *a* and is heated by an electric heater *c* surrounded by a porous

FIG. 3.

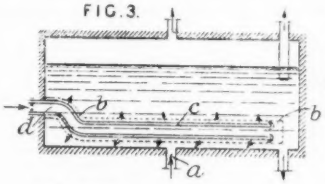
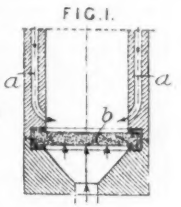


FIG. 1.



272,539

shell *b* containing a pipe *d* for introducing the gas. The vessel may be lined with a catalytic alloy containing iron 75 per cent., chromium 10 per cent., cobalt 10 per cent., molybdenum 2 per cent.

272,555. CATALYTIC MATERIALS. E. I. Du Pont de Nemours and Co., Wilmington, Del., U.S.A. (Assignees of W. A. Lazier.) International Convention date, June 12, 1926.

Catalysts for the synthesis of methanol and other oxygenated compounds, and for the production of hydrogen from carbon monoxide and steam, and for dehydrogenation processes, consist of trivalent chromium compounds. They are obtained by igniting a chromate or bichromate at 600°-1,000° C., by prolonged heating to redness of mixtures of chlorides and alkali chromates or bichromates, or by igniting at a red heat a double chromate or bichromate of a metal with ammonia or an organic base such as aniline or pyridine. Chromites of zinc, copper, cadmium, magnesium, manganese, silver and iron are specified for ammonia synthesis. Examples are given of the preparation of the double salts and of the catalysts.

272,556. CRACKING OILS, ETC. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, June 14, 1926.

Low boiling hydrocarbons are obtained in cracking processes by circulating in a closed circuit a large excess of hydrogenating gases to keep the partial pressure of the desired products below 10 per cent. of the total pressure. Crude mineral oil can be cracked to obtain 60 per cent. benzene by atomising it with heated hydrogen in an aluminium-lined vessel, and passing it at 475° C. and pressure of 200 atmospheres over molybdenum and chromium oxides. The quantities are such that 1 cub. metre of cooled product is obtained for a circulation of 15,000 cub. metres of hydrogen.

272,557. CATALYTIC OXIDATIONS. I. G. Farbenindustrie Akt.-Ges., Frankfort-on-Main, Germany. International Convention date, June 14, 1926.

Products of greater purity are obtained by the catalytic oxidation of organic compounds in the gaseous state, if the products are brought into contact with certain solid substances before separation. Suitable substances include pumice, silica gel, and active carbon, also calamine and iron turnings. Thus, the products from the catalytic oxidation of naphthalene are passed at 200° C. over granulated pumice or bauxite and then cooled to separate phthalic anhydride. Maleic anhydride and benzoquinone are produced from benzene, and benzaldehyde and benzoic acid from toluene.

272,842. AMMONIA AND ACETYLENE. Omnium des Industries Chimiques Procédés Tocco et Laudi, 366, Rue Saint Honore, Paris. International Convention date, June 15, 1926.

An oxide is heated with carbon and nitrogen to obtain a cyanide, which is then treated with hydrogen at 200° C. to obtain ammonia and a carbide. The carbide is treated with water to obtain acetylene, and the hydroxide heated to obtain the oxide, when the cyclic process recommences. Barium oxide is used in an example described.

272,860. VULCANISATION OF INDIARUBBER. Chemische Fabrik Kalk Ges., and H. Oehme, 1, Kalker Hauptstrasse, Kalk, Cologne, Germany. International Convention date, June 21, 1926.

Precipitated zinc hydroxide, or zinc acetate, formate, or basic carbonate is decomposed at a low temperature to obtain zinc oxide for the vulcanisation of indiarubber.

LATEST NOTIFICATIONS.

275,553. Process for colouring cellulose esters and ethers. Soc. Chimique des Usines du Rhone. August 3, 1926.
275,576. Evaporators. Electrolux, Ltd. August 3, 1926.
275,578. Process for dissolving titaniferous materials in acids. Titan Co. Aktieselskabet. August 3, 1926.
275,579. Process in the treatment of titaniferous materials. Titan Co. Aktieselskabet. August 3, 1926.
275,580. Process for the utilisation of titanium materials containing iron. Titan Co. Aktieselskabet. August 3, 1926.
275,585. Process for the manufacture of synthetic liquid fuels. Soc. Internationale des Procedes Prudhomme-Houdry. August 3, 1926.
275,590. Process for the production of nitro-pyridine arsinic acids. Binz, Dr. A., and Räth, Dr. C. August 5, 1926.
275,592. Processes for carrying out exothermic chemical reactions. Soc. L'Air Liquide, Soc. Anon. Pour L'Etude et L'Exploitation des Procedes G. Claude. August 9, 1926.
275,600. Catalysers for the synthesis of alcohols. Compagnie de Bethune. August 6, 1926.
275,604. Artificial resin compositions. Bakelite Corporation. August 3, 1926.
275,609. Manufacture of triarylmethane-dyestuffs. I. G. Farbenindustrie Akt.-Ges. August 9, 1926.
275,613. Manufacture of azo-dyestuffs. I. G. Farbenindustrie Akt.-Ges. August 5, 1926.
275,618. Process of converting tin ores into the form of pieces. Metallbank und Metallurgische Ges. Akt.-Ges. August 9, 1926.
275,622. Manufacture of unsymmetrically-substituted diaminopropanols. I. G. Farbenindustrie Akt.-Ges. August 3, 1926.
275,633. Process for the separation of benzole and similar hydrocarbons from cokery gases or other gases of the distillation of carbon by compression and cooling. Ges. für Linde's Eismaschinen Akt.-Ges., and Soc. Anon. Metallurgique de Sambre et Moselle. August 4, 1926.
275,636. Manufacture of condensation products of the anthraquinone series. I. G. Farbenindustrie Akt.-Ges. August 4, 1926.
275,641. Process for the production of cellulose esters. Elöd, Dr. E. August 9, 1926.
275,642. Process and apparatus for the treatment of heavy hydrocarbons. Marchand, H. August 5, 1926.
275,646. Furnaces for treating iron with a low proportion of carbon. Wüst, Dr. F. August 6, 1926.
275,653. Application of cellulose ethers or esters. I. G. Farbenindustrie Akt.-Ges. December 23, 1924.
275,660. Manufacture of cellulose derivatives. I. G. Farbenindustrie Akt.-Ges. August 6, 1926.
275,662. Destructive hydrogenation of carbonaceous materials. I. G. Farbenindustrie Akt.-Ges. August 7, 1926.
275,663. Manufacture and production of liquid and other hydrocarbons and derivatives thereof by the destructive hydrogenation of carbonaceous materials. I. G. Farbenindustrie Akt.-Ges. August 7, 1926.
275,664. Manufacture and production of liquid and other hydrocarbons and derivatives thereof by the destructive hydrogenation of carbonaceous materials. I. G. Farbenindustrie Akt.-Ges. August 7, 1926.
275,670. Manufacture and production of liquid and other hydrocarbons and derivatives thereof by the destructive hydrogenation of carbonaceous materials. I. G. Farbenindustrie Akt.-Ges. August 9, 1926.
275,672. Preparation of titanium and like compounds. Blumenfeld, J. August 9, 1926.

Specifications Accepted with Date of Application

246,168. Formates, Process for the manufacture of. Soc. l'Air Liquide, Soc. Anon. pour l'Etude et l'Exploitation des Procédés. G. Claude. January 17, 1925.
274,918–9. Sulphuric acid, Manufacture of. Sir C. W. Fielding. January 29, 1926.
248,729. Condensation products of urea or its derivatives and formaldehyde, Manufacture of. F. Pollak. March 3, 1925.
249,860. Decomposing salts of complex hydrofluoric acids. A. F. Meyerhofer. March 24, 1925.
269,908. Recovery of phosphorus and hydrogenated compounds thereof, as phosphoric acid. Urbain Corporation. April 21, 1926.
251,290. Hydrolysis or saponification of glycerides or other organic esters. V. R. Kokatnur. April 23, 1926.
251,636. Active carbon, Manufacture of. I. G. Farbenindustrie Akt.-Ges. April 29, 1925.
251,637. Disazo dyestuffs, Manufacture of. I. G. Farbenindustrie Akt.-Ges. April 28, 1925.
251,644. Acid dyestuffs of the rhodamine series. Soc. Anon. Durand et Huguenin. May 4, 1925.
257,907. Lactic acid esters, Manufacture of. Canadian Electro Products Co., Ltd. September 3, 1925.
264,143. Hydroxy acid esters, Manufacture of. Canadian Electro Products Co., Ltd. January 11, 1926.
265,548. Treatment of ores, wastes, oxides, metals, etc. M. Fourment. February 2, 1926.
274,949. Margarine and like edible fats. Production of. B. Jirotka. April 26, 1926.
274,952. Hydrogenation of liquids and semi-liquids. G. R. Schueler. April 28, 1926.
274,959. Distillation of crude oils. F. Tinker. April 28, 1926.
274,960. Hydroxylic compounds, Production of. J. W. C. Crawford and F. G. Willson. April 28, 1926.
274,966. Leuco-oxyanthraquinones, Manufacture of. W. Carpmael. (*I. G. Farbenindustrie Akt.-Ges.*) April 29, 1926.
274,990. Dyestuffs, Manufacture of. O. Y. Imray. (*I. G. Farbenindustrie Akt.-Ges.*) June 21, 1926.
275,002. Protecting iron or steel melts in furnaces or converters from oxidation and absorption of gases. B. Zwiebel. June 28, 1926.
275,044. Granular caustic alkalies, Producing. R. E. Wiley and C. E. Mensing. October 11, 1926.
275,116. Converting oxides into anhydrous fused chlorides. I. G. Farbenindustrie Akt-Ges. and K. Staib. March 5, 1927.
275,120. Conversion of heavy hydrocarbon oils into lighter oils. V. W. Northrup. March 21, 1927.

Applications for Patents

Gardner, D. Manufacture of carbon. 20,403. August 2.
Ges. für Lindes Eismaschinen Akt.-Ges. and Soc. Anon. Metallurgique de Sambrée et Moselle. Separation of benzol, etc., from cokery gas, etc. 20,513. August 3. (Germany, August 4, 1926.)
Gülker, F. Production of hydrogen. 20,432. August 2. (Germany, July 30, 1926.)
Hannach, O. Refrigerating-compounds. 20,563. August 4.
Hartford Empire Co. Temperature control in furnaces, etc. 20,613. August 4.
Harvey, M. T. Reaction products of cashew nut shell oil, etc. 20,516. August 3. (October 11, 1926.)
Horsley, G. F., and Imperial Chemical Industries, Ltd. Production of esters. 20,452. August 3.
Hughes, J. H. Concentrator for separating ores. 20,339. August 2.
Humphreys and Glasgow, Ltd. Multipass gas condensers. 20,495. August 3. (United States, August 12, 1926.)
I. G. Farbenindustrie Akt.-Ges. and A. L. Mond. Production of alumina, etc. 20,567. August 4.
I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of aromatic amines from nitro compounds. 20,575. August 4.
I. G. Farbenindustrie Akt.-Ges. and Johnson, J. Y. Production of fertilisers. 20,680. August 5.
I. G. Farbenindustrie Akt.-Ges. Process for colouring lacquers. 20,352. August 2. (Germany, August 13, 1926.)
I. G. Farbenindustrie Akt.-Ges. Production of acetaldehyde from gaseous mixtures. 20,353. August 2. (Germany, September 28, 1926.)
I. G. Farbenindustrie Akt.-Ges. Production of active masses containing carbon. 20,534. August 2.
I. G. Farbenindustrie Akt.-Ges. Manufacture of amidated sulphurised benzanthrone derivatives. 20,409. August 2. (Germany, August 2, 1926.)
I. G. Farbenindustrie Akt.-Ges. Manufacture of diamino-propanols. 20,472. August 3. (Germany, August 3, 1926.)
I. G. Farbenindustrie Akt.-Ges. Condensation products of anthraquinone series. 20,583. August 4. (Germany, August 4, 1926.)
I. G. Farbenindustrie Akt.-Ges. Application of cellulose ethers, etc. 20,708. August 5. (Germany, December 23, 1924.)
I. G. Farbenindustrie Akt.-Ges. Manufacture of cellulose derivatives. 20,863. August 8. (Germany, August 6, 1926.)
I. G. Farbenindustrie Akt.-Ges. Hydrogenation of carbonaceous materials. 20,890. August 8. (Germany, August 7, 1926.)
Imray, O. Y., and Soc. of Chemical Industry in Basle. Manufacture of azo dyestuffs. 20,582. August 4.
Koff, J. Apparatus for mixing, etc., liquids. 20,645. August 5.
Koff, J. Means for cooling liquids. 20,646. August 5.
Kolitsch, H. Separation of solid materials. 20,407. August 2. (Austria, August 14, 1926.)
Lockwood, A. A. Manufacture of vulcanised indiarubber, etc., articles. 20,591. August 4.
McNair, E. Cleansing preparation. 20,536. August 4. (New Zealand, August 26, 1926.)
Manchester Oxide Co., Ltd., and Scholefield, F. Catalysts. 20,544. August 4.
Marchand, H. Apparatus for treatment of heavy hydrocarbons. 20,653. August 5. (France, August 5, 1926.)
Marion Steam Shovel Co. Production of fuel from oils, etc. 20,376. August 2. (United States, December 15, 1926.)
Overstraeten, C. van. Process for extracting, etc., fatty materials contained in residues of washing waste-waters. 20,493. August 3. (Belgium, August 6, 1926.)
Parkes, D. W., and Robinson, A. P. Removal of tar acids from ammonia liquor, etc. 20,722. August 5.

Weekly Prices of British Chemical Products

The prices and comments given below respecting British chemical products are based on direct information supplied by the British manufacturers concerned. Unless otherwise qualified, the figures quoted apply to fair quantities, net and naked at makers' works.

General Heavy Chemicals

ACID ACETIC, 40% TECH.—£19 per ton.

ACID BORIC, COMMERCIAL.—Crystal, £34 per ton; powder, £36 per ton.

ACID HYDROCHLORIC.—3s. 9d. to 6s. per carboy d/d, according to purity, strength, and locality.

ACID NITRIC, 80° TW.—£21 10s. to £27 per ton, makers' works, according to district and quality.

ACID SULPHURIC.—Average National prices f.o.r. makers' works, with slight variations up and down owing to local considerations: 140° Tw., Crude Acid, 60s. per ton. 168° Tw., Arsenical, £5 10s. per ton. 168° Tw., Non-arsenical, £6 15s. per ton.

AMMONIA ALKALI.—£6 15s. per ton f.o.r. Special terms for contracts.

BISULPHITE OF LIME.—£7 10s. per ton, packages extra, returnable.

BLEACHING POWDER.—Spot, £9 10s. per ton d/d; Contract, £8 10s. per ton d/d, 4-ton lots.

BORAX, COMMERCIAL.—Crystals, £19 10s. to £20 per ton; granulated, £19 per ton; powder, £21 per ton. (Packed in 2-cwt. bags, carriage paid any station in Great Britain.)

CALCIUM CHLORIDE (SOLID).—£5 to £5 5s. per ton d/d carr. paid.

COPPER SULPHATE.—£25 to £25 10s. per ton.

METHYLATED SPIRIT 61 O.P.—Industrial, 2s. 5d. to 2s. 10d. per gall.; pyridinised industrial, 2s. 7d. to 3s. per gall.; mineralised, 3s. 6d. to 3s. 10d. per gall.; 64 O.P., 1d. extra in all cases; prices according to quantity.

NICKEL SULPHATE.—£38 per ton d/d.

NICKEL AMMONIA SULPHATE.—£38 per ton d/d.

POTASH CAUSTIC.—£30 to £33 per ton.

POTASSIUM BICHROMATE.—4½d. per lb.

POTASSIUM CHLORATE.—3¾d. per lb., ex wharf, London, in cwt. kegs.

SALAMMONIAC.—£45 to £50 per ton d/d. Chloride of ammonia, £37 to £45 per ton, carr. paid.

SALT CAKE.—£3 15s. to £4 per ton d/d. In bulk.

SODA CAUSTIC, SOLID.—Spot lots delivered, £15 2s. 6d. to £18 per ton, according to strength; 20s. less for contracts.

SODA CRYSTALS.—£5 to £5 5s. per ton, ex railway depots or ports.

SODIUM ACETATE 97/98%.—£21 per ton.

SODIUM BICARBONATE.—£10 10s. per ton, carr. paid.

SODIUM BICHROMATE.—3½d. per lb.

SODIUM BISULPHITE POWDER, 60/62%.—£17 10s. per ton for home market, 1-cwt. drums included.

SODIUM CHLORATE.—2¾d. per lb.

SODIUM NITRITE, 100% BASIS.—£27 per ton d/d.

SODIUM PHOSPHATE.—£14 per ton, f.o.r. London, casks free.

SODIUM SULPHATE (GLAUBER SALTS).—£3 12s. 6d. per ton.

SODIUM SULPHIDE CONC. SOLID, 60/65.—£13 5s. per ton d/d. Contract, £13. Carr. paid.

SODIUM SULPHIDE CRYSTALS.—Spot, £8 12s. 6d. per ton d/d. Contract, £8 10s. Carr. paid.

SODIUM SULPHITE, PEA CRYSTALS.—£14 per ton f.o.r. London, 1-cwt. kegs included.

Coal Tar Products

ACID CARBOLIC CRYSTALS.—8d. to 9d. per lb. Crude 60's, 2s. 6d. to 2s. 8d. per gall.

ACID CRESYLIC 99/100.—2s. 9d. to 2s. 10d. per gall. 97/99.—2s. 1½d. to 2s. 3d. per gall. Pale, 95%, 2s. to 2s. 1½d. per gall. Dark, 1s. 9d. to 1s. 10d. per gall.

ANTHRACENE.—A quality, 2½d. to 3d. per unit. 40%, 3d. per unit.

ANTHRACENE OIL, STRAINED.—8d. to 8½d. per gall. Unstrained, 7½d. to 8d. per gall.; both according to gravity.

BENZOLE.—Crude 65's, 10d. to 10½d. per gall., ex works in tank wagons. Standard Motor, 1s. 3d. to 1s. 3½d. per gall., ex works in tank wagons. Pure, 1s. 6d. to 1s. 7d. per gall., ex works in tank wagons.

TOLUOLE.—90%, 1s. 4d. to 1s. 9d. per gall. Firm. Pure, 1s. 7d. to 2s. per gall.

XYLOL.—1s. 3d. to 1s. 10d. per gall. Pure, 2s. 5d. per gall.

CREOSOTE.—Cresylic, 20/24%, 10d. to 11d. per gall. Standard specification, 7⅜d. to 7½d.; middle oil, 9d. to 10d. per gall. Heavy, 8½d. to 8¾d. per gall. Salty, 7d. per gall. less 1¼%.

NAPHTHA.—Crude, 7½d. to 8d. per gall. according to quality. Solvent 90/160, 1s. 2d. to 1s. 4d. per gall. Solvent 95/160, 1s. 4d. to 1s. 5d. per gall. Solvent 90/190, 1s. to 1s. 4d. per gall.

NAPHTHALENE CRUDE.—Drained Creosote Salts, £7 10s. per ton. Whizzed or hot pressed, £8 10s. to £9 per ton.

NAPHTHALENE.—Crystals, £11 10s. to £13 10s. per ton. Quiet. Flaked, £12 10s. to £13 per ton, according to districts.

PITCH.—Medium soft, 88s. 9d. to 92s. 6d. per ton, f.o.b., according to district.

PYRIDINE.—90/140, 5s. 9d. to 7s. per gall. 90/180, 4s. 6d. to 5s. per gall. Heavy, 4s. to 4s. 6d. per gall.

Intermediates and Dyes

In the following list of Intermediates delivered prices include packages except where otherwise stated:

ACID AMIDONAPHTHOL DISULPHO (1-8-2-4).—10s. 9d. per lb.

ACID ANTHRANILIC.—6s. per lb. 100%.

ACID BENZOIC.—1s. 9d. per lb.

ACID GAMMA.—4s. 9d. per lb.

ACID H.—3s. 3d. per lb. 100% basis d/d.

ACID NAPHTHIONIC.—1s. 6d. per lb. 100% basis d/d.

ACID NEVILLE AND WINTHER.—4s. 9d. per lb. 100% basis d/d.

ACID SULPHANILIC.—9d. per lb. 100% basis d/d.

ANILINE OIL.—7½d. per lb. naked at works.

ANILINE SALTS.—7½d. per lb. naked at works.

BENZALDEHYDE.—2s. 3d. per lb.

BENZIDINE BASE.—3s. 3d. per lb. 100% basis d/d.

BENZOIC ACID.—1s. 8½d. per lb.

o-CRESOL 29/31° C.—4½d. per lb. Fair inquiry.

m-CRESOL 98/100%.—2s. 7½d. per lb. Only limited inquiry.

p-CRESOL 32/34° C.—2s. 8½d. per lb. Only limited inquiry.

DICHLORANILINE.—2s. 3d. per lb.

DIMETHYLANILINE.—1s. 11d. per lb. d/d. Drums extra.

DINITROBENZENE.—9d. per lb. naked at works. £75 per ton.

DINITROCHLORBENZENE.—£84 per ton d/d.

DINITROTOLUENE.—48/50° C. 8d. per lb. naked at works. 66/68° C. 9d. per lb. naked at works.

DIPHENYLAMINE.—2s. 10d. per lb. d/d.

a-NAPHTHOL.—2s. per lb. d/d.

B-NAPHTHOL.—11d. to 1s. per lb. d/d.

a-NAPHTHYLAMINE.—1s. 3d. per lb. d/d.

B-NAPHTHYLAMINE.—3s. per lb. d/d.

o-NITRANILINE.—5s. 9d. per lb.

m-NITRANILINE.—3s. per lb. d/d.

p-NITRANILINE.—1s. 8d. per lb. d/d.

NITROBENZENE.—6d. per lb. naked at works.

NITRONAPHTHALENE.—1s. 3d. per lb. d/d.

R. SALT.—2s. 2d. per lb. 100% basis d/d.

SODIUM NAPHTHIONATE.—1s. 8½d. per lb. 100% basis d/d.

o-TOLUIDINE.—7½d. per lb. naked at works.

p-TOLUIDINE.—2s. 2d. per lb. naked at works.

m-XYLIDINE ACETATE.—2s. 11d. per lb. 100%.

N. W. Acid.—4s. 9d. per lb. 100%.

Wood Distillation Products

ACETATE OF LIME.—Brown, £9 to £9 5s. per ton. Grey, £15 per ton. Liquor, 9d. per gall. 32° Tw.

CHARCOAL.—£6 to £9 per ton, according to grade and locality.

IRON LIQUOR.—1s. 3d. per gall. 32° Tw. 1s. per gall. 24° Tw.

RED LIQUOR.—9d. to 10d. per gall. 16° Tw.

WOOD CREOSOTE.—1s. 9d. per gall. Unrefined.

WOOD NAPHTHA, MISCIBLE.—4s. to 4s. 1d. per gall., 60% O.P. Solvent, 4s. 3d. per gall., 40% O.P.

WOOD TAR.—£4 10s. to £5 per ton and upwards, according to grade.

BROWN SUGAR OF LEAD.—£40 15s. per ton.

Rubber Chemicals

ANTIMONY SULPHIDE.—Golden, 6½d. to 1s. 5½d. per lb., according to quality; Crimson, 1s. 4d. to 1s. 6d. per lb., according to quality.

ARSENIC SULPHIDE, YELLOW.—1s. 9d. per lb.

BARYTES.—£3 10s. to £6 15s. per ton, according to quality.

CADMIUM SULPHIDE.—2s. 6d. to 2s. 9d. per lb.

CARBON BISULPHIDE.—£20 to £25 per ton, according to quantity.

CARBON BLACK.—5½d. per lb., ex wharf.

CARBON TETRACHLORIDE.—£45 to £50 per ton, according to quantity, drums extra.

CHROMIUM OXIDE, GREEN.—1s. 1d. per lb.

DIPHENYLGUANIDINE.—3s. 9d. per lb.

INDIARUBBER SUBSTITUTES, WHITE AND DARK.—5¾d. to 6½d. per lb.

LAMP BLACK.—£35 per ton, barrels free.

LEAD HYPOSULPHITE.—9d. per lb.

LITHOPONE, 30%.—£22 10s. per ton.

MINERAL RUBBER "RUBPRON."—£13 12s. 6d. per ton, f.o.r. London.

SULPHUR.—£9 to £11 per ton, according to quality.

SULPHUR CHLORIDE.—4d. to 7d. per lb., carboys extra.

SULPHUR PRECIP. B.P.—£47 10s. to £50 per ton.

THIOCARBAMIDE.—2s. 6d. to 2s. 9d. per lb. carriage paid.

THIOCARBANILIDE.—2s. 1d. to 2s. 3d. per lb.

VERMILION, PALE OR DEEP.—6s. to 6s. 3d. per lb.

ZINC SULPHIDE.—1s. per lb.

Pharmaceutical and Photographic Chemicals

ACID, ACETIC, PURE, 80%.—£39 per ton ex wharf London in glass containers.

ACID, ACETYL SALICYLIC.—2s. 4d. to 2s. 5d. per lb.

ACID, BENZOIC B.P.—2s. to 3s. 3d. per lb., according to quantity. Solely ex Gum, 1s. to 1s. 3d. per oz., according to quantity.

ACID, BORIC B.P.—20 cwt. lots, crystal, 40s. per cwt.; powder, 44s. per cwt. Carriage paid any station in Great Britain, in ton lots.
ACID, CAMPHORIC.—19s. to 21s. per lb.
ACID, CITRIC.—1s. 7½d. to 1s. 8d. per lb., less 5%.
ACID, GALLIC.—2s. 8d. per lb. for pure crystal, in cwt. lots.
ACID, PYROGALLIC, CRYSTALS.—7s. 3d. per lb. Resublimed, 8s. 3d. per lb.
ACID, SALICYLIC, B.P.—1s. 2½d. to 1s. 5d. per lb.; Technical.—11½d. to 1s. per lb.
ACID, TANNIC B.P.—2s. 8d. to 2s. 10d. per lb.
ACID, TARTARIC.—1s. 3¼d. per lb., less 5%. Firm market.
AMIDOL.—9s. per lb., d/d.
ACETANILIDE.—1s. 6d. to 1s. 8d. per lb. for quantities.
AMIDOPYRIN.—8s 6d. per lb.
AMMONIUM BENZOATE.—3s. 3d. to 3s. 6d. per lb., according to quantity.
AMMONIUM CARBONATE B.P.—£37 per ton. Powder, £39 per ton in 5 cwt. casks. Resublimated: 1s. per lb.
ATROPINE SULPHATE.—11s. per oz. for English make.
BARBITONE.—6s. per lb.
BENZONAPHTHOL.—3s. 3d. per lb. spot.
BISMUTH CARBONATE.—9s. 9d. to 10s. per lb.
BISMUTH CITRATE.—9s. 6d. to 9s. 9d. per lb.
BISMUTH SALICYLATE.—8s. 9d. to 9s. per lb.
BISMUTH SUBNITRATE.—7s. 9d. to 8s. per lb.
BISMUTH NITRATE.—5s. 9d. to 6s. per lb.
BISMUTH OXIDE.—13s. 9d. to 14s. per lb.
BISMUTH SUBCHLORIDE.—11s. 9d. to 12s. per lb.
BISMUTH SUBGALLATE.—7s. 9d. to 8s. per lb. Extra and reduced prices for smaller and larger quantities respectively; Liquor Bismuthi B.P. in W. Qts. 1s. 1d. per lb.; 12 W. Qts. 1s. per lb.; 36 W. Qts. 11½d. per lb.
BORAX B.P.—20 cwt. lots, crystal, 24s. per cwt.; powder, 26s. per cwt. according to quantity. Carriage paid any station in Great Britain, in ton lots.
BROMIDES.—Potassium, 1s. 10d. to 2s. 1d. per lb.; sodium, 2s. 1d. to 2s. 4d. per lb.; ammonium, 2s. 3d. to 2s. 6d. per lb.; granulated ½d. per lb. less; all spot
CALCIUM LACTATE.—1s. 2½d. to 1s. 3½d. per lb.
CAMPHOR.—Refined flowers, 2s. 11d. to 3s. 1d. per lb., according to quantity; also special contract prices.
CHLORAL HYDRATE.—3s. 6d. per lb., duty paid.
CHLOROFORM.—2s. 3d. to 2s. 7½d. per lb., according to quantity.
CREOSOTE CARBONATE.—6s. per lb.
ETHERS.—Prices for Winchester quarts; dozen Winchester quarts; carboys or drums; and 10 cwt. lots respectively: ·730—1s. 2½d.; 1s. 2d.; 1s. 1½d.; 1s. 0½d.; ·720 technical—1s. 5½d.; 1s. 5d.; 1s. 4½d.; 1s. 3½d.; ·720 pur. (Aether B.P., 1914)—2s. 4d.; 2s. 3½d.; 2s. 3d.; 2s. 2d.
FORMALDEHYDE.—£39 per ton, in barrels ex wharf.
GUAIACOL CARBONATE.—5s. per lb.
HEXAMINE.—2s. 4d. to 2s. 6d. per lb.
HOMATROPINE HYDROBROMIDE.—30s. per oz.
HYDRASTINE HYDROCHLORIDE.—English make offered at 120s. per oz.
HYDROGEN PEROXIDE (12 VOLS.).—1s. 4d. per gallon, f.o.r. makers' works, naked. B.P., 10 vols., bulk, 2s. to 2s. 3d. per gal.; Winchesters, 2s. 11d. to 3s. 6d. per gal.; 20 vols., bulk, 3s. 6d. to 4s. 6d. per gal.; Winchesters, 5s. to 6s. per gal.
HYDROQUINONE.—2s. 11d. per lb., in cwt. lots.
HYPOPHOSPHITES.—Calcium, 3s. 6d. per lb., for 28-lb. lots; potassium, 4s. 1d. per lb.; sodium, 4s. per lb.
IRON AMMONIUM CITRATE.—B.P., 2s. 1d. to 2s. 4d. per lb. Green, 2s. 4d. to 2s. 9d. per lb. U.S.P., 2s. 2d. to 2s. 5d. per lb.
IRON PERCHLORIDE.—3d. to 4d. per lb., 22s. per cwt.
MAGNESIUM CARBONATE.—Light commercial, £31 per ton net.
MAGNESIUM OXIDE.—Light commercial, £62 10s. per ton, less 2½%; Heavy Commercial, £21 per ton, less 2½%; in quantity lower; Heavy Pure, 2s. to 2s. 3d. per lb., in 1 cwt. lots.
MENTHOL.—A.B.R. recrystallised B.P., 18s. 6d. per lb. net; Synthetic detached crystals, 10s. 6d. to 12s. 9d. per lb., according to quantity; Liquid (95%), 11s. 3d. per lb.
MERCURIALS B.P.—Up to 1 cwt. lots, Red Oxide, 7s. 6d. to 7s. 7d. per lb., levig., 7s. to 7s. 1d. per lb.; Corrosive Sublimate, Lump, 5s. 9d. to 5s. 10d. per lb., Powder, 5s. 2d. to 5s. 3d. per lb.; White Precipitate, Lump, 5s. 11d. to 6s. per lb., Powder, 6s. to 6s. 1d. per lb., Extra Fine, 6s. 1d. to 6s. 2d. per lb.; Calomel, 6s 4d. to 6s. 5d. per lb.; Yellow Oxide, 6s. 10d. to 6s. 11d. per lb.; Persulph., B.P.C., 6s. 1d. to 6s. 2d. per lb.; Sulph. nig., 5s. 10d. to 5s. 11d. per lb. Special prices for larger quantities.
METHYL SALICYLATE.—1s. 9d. per lb.
METHYL SULPHONAL.—9s. 6d. to 9s. 9d. per lb.
METOL.—11s. per lb. British make.
PARAFORMALDEHYDE.—1s. 9d. per lb. for 100% powder.
PARALDEHYDE.—1s. 4d. per lb.
PHENACETIN.—2s. 9d. to 3s. per lb.
PHENAZONE.—4s. 3d. to 4s. 6d. per lb.
PHENOLPHTHALEIN.—6s. to 6s. 3d. per lb.
POTASSIUM BITARTRATE 99/100% (Cream of Tartar).—100s. per cwt. less 2½% for ton lots.
POTASSIUM CITRATE.—B.P.C., 1911: 1s. 8d. to 1s. 11d. per lb.; U.S.P.: 1s. 11d. to 2s. 2d. per lb.
POTASSIUM FERRICYANIDE.—1s. 9d. per lb., in cwt. lots.
POTASSIUM IODIDE.—16s. 8d. to 17s. 5d. per lb. according to quantity.
POTASSIUM METABISULPHITE.—6d. per lb., 1-cwt. kegs included, f.o.r. London.
POTASSIUM PERMANGANATE.—B.P. crystals, 6d. per lb., spot.
QUININE SULPHATE.—2s. per oz., 1s. 8d. to 1s. 9d. for 1000 oz. lots in 100 oz. tins.
RESORCIN.—3s. 9d. to 4s. per lb., spot.
SACCHARIN.—55s. per lb.; in quantity lower.
SALOL.—2s. 4d. per lb.
SODIUM BENZOATE, B.P.—1s. 10d. to 2s. 2d. per lb.
SODIUM CITRATE, B.P.C., 1911.—1s. 8d. to 1s. 11d. per lb., B.P.C., 1923—1s. 9d. to 1s.11d. per lb. for 1 cwt. lots. U.S.P., 1s. 11d. to 2s. 2d. per lb.,according to quantity.
SODIUM FERROCYANIDE.—4d. per lb., carriage paid.
SODIUM HYPOSULPHITE, PHOTOGRAPHIC.—£15 5s. per ton, d/d consignee's station in 1-cwt. kegs.
SODIUM NITROPRUSSIDE.—16s. per lb.
SODIUM POTASSIUM TARTRATE (ROCHELLE SALT).—90s. to 95s. per cwt. Crystals, 5s. per cwt. extra.
SODIUM SALICYLATE.—Powder, 1s. 8½d. to 1s. 10d. per lb. Crystal, 1s. 9½d. to 1s. 10½d. per lb.
SODIUM SULPHIDE, PURE RECRYSTALLISED.—10d. to 1s. 2d. per lb.
SODIUM SULPHITE, ANHYDROUS, £27 10s. to £28 10s. per ton, according to quantity; 1-cwt. kegs included.
SULPHONAL.—6s. 6d. to 6s. 9d. per lb.
TARTAR EMETIC, B.P.—Crystal or powder, 2s. 1d. to 2s. 3d. per lb.
THYMOL.—Puriss., 10s. 6d. to 11s. 6d. per lb., according to quantity. Firmer. Natural, 15s. per lb.

Perfumery Chemicals

ACETOPHENONE.—6s. 6d. per lb.
AUBEPINE (EX ANETHOL), 10s. 6d. per lb
AMYL ACETATE.—2s. per lb.
AMYL BUTYRATE.—5s. 3d. per lb.
AMYL SALICYLATE.—3s. per lb.
ANETHOL (M.P. 21/22° C.).—5s. 6d. per lb.
BENZYL ACETATE FROM CHLORINE-FREE BENZYL ALCOHOL.—2s. per lb.
BENZYL ALCOHOL FREE FROM CHLORINE.—2s. per lb
BENZALDEHYDE FREE FROM CHLORINE.—2s. 6d. per lb.
BENZYL BENZOATE.—2s. 6d. per lb.
CINNAMIC ALDEHYDE NATURAL.—17s. per lb.
COUMARIN.—10s. per lb.
CITRONELLOL.—13s. 9d. per lb.
CITRAL.—8s. 3d. per lb.
ETHYL CINNAMATE.—6s. 6d. per lb.
ETHYL PHTHALATE.—2s. 9d. per lb.
EUGENOL.—8s. 6d. per lb.
GERANIOL (PALMAROSA).—18s. 6d. per lb.
GERANIOL.—6s. 6d. to 10s. per lb.
HELIOTROPINE.—4s. 9d. per lb.
ISO EUGENOL.—13s. 6d. per lb.
LINALOL.—Ex Bois de Rose, 15s. per lb. Ex Shui Oil, 10s. 6d. per lb.
LINALYL ACETATE.—Ex Bois de Rose, 18s. 6d. per lb. Ex Shui Oil, 14s. 6d. per lb.
METHYL ANTHRANILATE.—8s. 6d. per lb
METHYL BENZOATE.—4s. per lb.
MUSK KETONE.—35s. per lb.
MUSK XYLOL.—8s. 6d. per lb.
NEROLIN.—4s. 6d. per lb.
PHENYL ETHYL ACETATE.—12s. per lb.
PHENYL ETHYL ALCOHOL.—10s. 6d. per lb.
RHODINOL.—32s. 6d. per lb.
SAFROL.—1s. 6d. per lb.
TERPINEOL.—1s. 8d. per lb.
VANILLIN.—18s. per lb.

Essential

ALMOND OIL.—11s. per lb.
ANISE OIL.—3s. per lb.
BERGAMOT OIL.—28s. per lb.
BOURBON GERANIUM OIL.—14s. 6d. per lb.
CAMPHOR OIL.—75s. per cwt.
CANANGA OIL, JAVA.—26s. per lb.
CINNAMON OIL LEAF.—6d. per oz.
CASSIA OIL, 80/85%.—7s. 6d. per lb.
CITRONELLA OIL.—Java, 85/90%, 1s. 11d. per lb. Ceylon, pure, 1s. 9d. per lb.
CLOVE OIL.—6s. per lb.
EUCALYPTUS OIL, 75/80 %.—2s. 3d. per lb.
LAVENDER OIL.—Mont Blanc, 38/40%, Esters, 22s. 6d. per lb.
LEMON OIL.—8s. per lb.
LEMONGRASS OIL.—4s. 6d. per lb.
ORANGE OIL, SWEET.—10s. 6d. per lb.
OTTO OF ROSE OIL.—Anatolian, 30s. per oz. Bulgarian, 70s. per oz.
PALMA ROSA OIL.—10s. 6d. per lb.
PEPPERMINT OIL.—Wayne County, 17s. per lb. Japanese, 8s. per lb.
PETITGRAIN OIL.—7s. 9d. per lb.
SANDALWOOD OIL.—Mysore, 26s. 6d. per lb.; 90/95%, 16s. 6d. per lb.

London Chemical Market

The following notes on the London Chemical Market are specially supplied to* THE CHEMICAL AGE *by Messrs. R. W. Greeff & Co., Ltd., and Messrs. Chas. Page & Co., Ltd., and may be accepted as representing these firms' independent and impartial opinions.

London, August 17, 1927.

THE increased demand for chemical products noted in our last report continues and prices are extremely firm with an upward tendency. Export trade is without special feature.

General Chemicals

ACETONE is in moderate request, and is unchanged in price at about £62 per ton.

ACID ACETIC is steady and price unchanged, and firm at £37 to £38 per ton for 80%.

ACID FORMIC is in good request and price is firm at £46 10s. to £47 per ton for 85% technical.

ACID LACTIC continues in good demand for the pale quality, which is firm at £43 for 50% by weight delivered.

ACID OXALIC.—A steady business is passing at the advanced prices recently noted.

ALUMINA SULPHATE.—Quite a fair business is reported and prices both for spot and forward are very firm at round about £5 10s. per ton for 17/18%. The tendency is upward.

ARSENIC.—The increased demand continues on export account and prices now tend to advance.

BARIUM CHLORIDE is in fair request and moderately steady at about £8 per ton, ex warehouse.

COPPER SULPHATE is active for this time of the year, and the price holds firm at £23 5s. to £23 10s. for first-class brand.

EPSOM SALTS continues in heavy request, especially for export. Price unchanged.

FORMALDEHYDE.—Demand continues to improve and price is steady at about £40 per ton, with an upward tendency.

LEAD ACETATE is also a bright spot, with white at £43 to £44 per ton and brown at about £42 per ton.

LEAD NITRATE is moderately active and firm at £38 to £39 per ton.

LIME ACETATE is active, especially for export, and price inclined to harden.

METHYL ACETONE is in fair request and price extremely firm at £61 10s. to £62 per ton.

POTASSIUM CHLORATE is steadier, and offers are being made at about £24 to £26 per ton.

POTASSIUM PERMANGANATE is only in fair request, but price is firm at 7¼d. per lb.

POTASSIUM PRUSSIATE.—The demand for this material is small, but the price is well held at from £60 to £65, according to quantity and position.

SODIUM ACETATE.—A good business is being transacted in this article, and the price is very steady at £18 15s. to £19 per ton.

SODIUM BICHROMATE is unchanged at British maker's figures.

SODIUM CHLORATE.—Demand somewhat better, but price unchanged at £28 per ton.

SODIUM HYPOSULPHITE.—Demand is only poor, but there is no change in the price either for commercial or photographic quality.

SODIUM NITRITE is in steady request at from £19 10s. to £20 10s. per ton.

SODIUM PHOSPHATE is active, with business being done at about £12 10s. per ton.

SODIUM PRUSSIATE is unchanged at 4½d. per lb., demand fair.

SODIUM SULPHIDE.—Only a very small business is reported. Price nominally unchanged.

ZINC SULPHATE moves steadily into consumption and the price is well held at £13 10s. per ton.

Coal Tar Products

There is no great change to report in the market values of coal tar products since last week.

BENZOL.—Following the drop in petrol prices the values of benzols have been reduced somewhat. 90's benzol is quoted at 1s. 4d. to 1s. 5d. per gallon on rails, while the motor quality is quoted at 1s. 1½d. to 1s. 2½d. per gallon.

PURE BENZOL is quoted at 1s. 7½d. to 1s. 8½d. per gallon, on rails.

CREOSOTE OIL is firm, the price in the north being 7½d. per gallon, on rails, while the price in London is 8¼d. to 8½d. per gallon.

CRESYLIC ACID shows further signs of weakness, and can be bought at 2s. 2d. per gallon, ex works, for the pale quality, 97/99%, while the dark quality 95/97% is worth about 1s. 11d. per gallon.

SOLVENT NAPHTHA is plentiful, and can be bought at about 10d. per gallon on rails.

HEAVY NAPHTHA is unchanged, at about 11d. per gallon on rails.

NAPHTHALENES remain unchanged, at about £6 15s. per ton for the 74/76 quality, while the 76/78 quality is quoted at £8 to £8 10s. per ton.

PITCH is unchanged at about 85s. per ton, f.o.b. U.K. ports.

Latest Oil Prices

LONDON, August 17.—LINSEED OIL.—Trade was more active at rather easier prices. Spot, £32; August, £31 5s.; September-December, £31 15s.; January-April, £32 5s. RAPE OIL was quiet. Crude extracted, £42; technical refined, £44 10s.; Japanese crude, August-September, £40. COTTON OIL was unchanged. Refined common edible, £40; Bombay crude, £34; Egyptian crude, £35; deodorised, £42. TURPENTINE firmer. American, spot, £41 3d., and September-December, 42s. 9d. per cwt.

HULL, August 17.—LINSEED OIL.—August, £31 5s.; September-December, £31 15s.; January-April, £32 7s. 6d. per ton. COTTON OIL.—Egyptian crude, £35; edible refined, £38 15s.; technical, £37 10s.; deodorised, £40 15s. PALM KERNEL OIL.—Crushed naked, 5½ per cent., £37. GROUNDNUT OIL.—Crushed-extracted, £42; deodorised, £46. SOYA OIL.—Extracted and crushed, £33 5s.; deodorised, £36 15s. RAPE OIL.—Crude-extracted, £42; refined, £44 per ton net cash terms, ex mill.

Nitrogen Products

Export.—During the last week the market has remained firm and prices have ranged from £9 5s. 6d. to £9 8s. per ton, f.o.b. U.K. ports in single bags. It is reported there have been heavy purchases on the Continent. The Far East are also buyers. It seems that the low prices at which producers are now selling will result in the absorption of the increased production.

Home.—Since the announcement of prices it is reported that several large buyers have covered their requirements for this season. The demand for immediate consumption is very small.

Nitrate of Soda.—The nitrate market remains quiet, with prices ranging from 16s. to 16s. 6d. per metric quintal, f.a.s. Chile. Since the announcement of the sulphate prices the purchases of nitrate have been very small.

French Output of Ammonium Sulphate

L'Information reports that, while in 1926 the German production of sulphate of ammonia reached 1,500,000 tons, the output in France was only 154,000 tons or half of that country's consumption. The works for the manufacture of synthetic nitrogenous products at Toulouse have commenced working, and although the daily output at the moment is only 40 tons of sulphate of ammonia it is expected that from 1928 their output will reach 150,000 tons per year.

Considering the installations erected by colliery companies and the quantity obtainable as by-products, it is probable that the French output of sulphate will in a year attain the figure of 500,000 tons per annum, and thus free the country from foreign imports, which for the moment are facilitated by the reparations payments in hand.

The Isotopes of Lead

LEAD has now been resolved into its isotopes. Dr. F. W. Aston, F.R.S., of Cambridge University, who some years ago received a Nobel prize for his work on isotopes, announces in a letter to *Nature* (August 13), that he has succeeded in obtaining the mass-spectrum of ordinary lead. This indicates that the three principal isotopes have atomic weight 206, 207, and 208, the relative intensities agreeing with the atomic weight 207·2 of ordinary lead. In addition, there may be isotopes of atomic weight 203, 204, 205, and 209.

In the same number of *Nature* is a letter from Mr. D. M. Morrison, in which evidence is put forward for the belief that helium enters into combination with other elements.

A Canadian Electro-Chemical Development

THE further development of Shawinigan Falls as one of the most important electro-chemical manufacturing centres in America is foreshadowed by the proposal of the Canada Carbide Co., Ltd., a subsidiary of the Shawinigan Water and Power Co., to build a new furnace. The capacity will be approximately 50 per cent. greater than the present furnace and the new equipment will cost $250,000. Calcium carbide made by this company is converted into acetylene and sold to the Canadian Electro Products Co., Ltd.,

Scottish Chemical Market

The following notes on the Scottish Chemical Market are specially supplied to THE CHEMICAL AGE *by Messrs. Charles Tennant and Co., Ltd., Glasgow, and may be accepted as representing the firm's independent and impartial opinions.*

Glasgow, August 17, 1927.

BUSINESS in the heavy chemical market continues fairly satisfactory, inquiry being rather better than for some little time.

Prices of most products show little change with the exception of arsenic, which is still rather scarce for prompt delivery.

Industrial Chemicals

ACID ACETIC.—98/100%, £65 to £67 per ton, according to quality and packing, c.i.f. U.K. ports; 80% pure, £37 10s. per ton, ex wharf; 80% technical, £37 10s. per ton, ex wharf.

ACID BORIC.—Crystal, granulated or small flakes, £34 per ton. Powder, £36 per ton packed in bags, carriage paid U.K. stations.

ACID CARBOLIC, ICE CRYSTALS.—Still in poor demand and price unchanged at about 8d. per lb., f.o.b. U.K. ports.

ACID CITRIC, B.P. CRYSTALS.—Demand moderate but price unchanged at about 1s. 7d. per lb., less 5%, ex store, for English material. Continental quoted 1s. 8d. per lb., less 5%, c.i.f. U.K. ports.

ACID HYDROCHLORIC.—Usual steady demand. Arsenical quality, 4s. 9d. per carboy. Dearsenicated quality, 6s. 3d. per carboy, ex works.

ACID NITRIC, 80%.—Quoted £23 5s. per ton, ex station, full truck loads.

ACID OXALIC.—Quoted price unchanged at 3d. per lb., ex store, spot delivery, but this price could probably be shaded for important quantities.

ACID SULPHURIC.—144°, £3 12s. 6d. per ton; 168°, £7 per ton, ex works, full truck loads. Dearsenicated quality, £os. per ton more.

ACID TARTARIC, B.P. CRYSTALS.—Now quoted 1s. 3¾d. per lb., less 5%, ex wharf.

ALUMINA SULPHATE 17/18% IRON FREE.—Spot material quoted £5 12s. 6d., per ton, ex store. On offer for early delivery at £5 5s. per ton, c.i.f. U.K. ports.

ALUM POTASH.—Lump quality on offer from the Continent, £8 5s. per ton, c.i.f. U.K. ports. Powdered, 2s. 6d. per ton less. Lump on spot on offer at £9 2s. 6d. per ton, ex store.

AMMONIA ANHYDROUS.—Unchanged at about 9d. per lb., carriage paid. Containers extra and returnable.

AMMONIA CARBONATE.—Lump, £37 per ton; powdered, £39 per ton, packed in 5 cwt. casks, delivered or f.o.b. U.K. ports.

AMMONIA LIQUID, 880.—Unchanged at about 2¼d. to 3d. per lb., delivered according to quantity.

AMMONIA MURIATE.—Grey galvanisers' crystals of English manufacture quoted £23 to £24 per ton, ex station. Continental on offer £19 15s. per ton, c.i.f. U.K. ports. Fine white crystals of continental manufacture quoted £18 per ton, c.i.f. U.K. ports.

ARSENIC, WHITE POWDERED.—Quoted £19 5s. per ton, ex wharf, prompt despatch from mines. Spot material £19 15s. per ton, ex store.

BARIUM CARBONATE, 98/100%.—Continental now offered at £7 2s. 6d. per ton, c.i.f. U.K. ports.

BARIUM CHLORIDE, 98/100%.—Large white crystals quoted £6 17s. 6d. per ton, c.i.f. U.K. ports.

BARYTES.—English material unchanged at £5 5s. per ton, ex works. Continental quoted £5 per ton, c.i.f. U.K. ports.

BLEACHING POWDER.—Contract price to consumers, £8 per ton, ex station, minimum 4-ton lots. Spot material, 10s. per ton extra. Continental on offer at £7 5s. per ton, ex wharf.

BORAX.—Granulated, £19 10s. per ton; crystals, £20 per ton; powder, £21 per ton, carriage paid U.K. ports.

CALCIUM CHLORIDE.—English manufacturers' price unchanged at £5 to £5 5s. per ton, ex station, with a slight concession for contracts. Continental quoted £3 15s. per ton, c.i.f. U.K. ports.

COPPERAS, GREEN.—Unchanged at about £3 10s. per ton, f.o.r. works or £4 12s. 6d. per ton, f.o.b. U.K. ports, for export.

COPPER SULPHATE.—Continental material now quoted £23 15s. per ton, ex wharf. British material on offer at £23 10s. per ton, f.o.b. U.K. ports.

FORMALDEHYDE, 40%.—Unchanged at £38 per ton. c.i.f. U.K. ports. Spot material quoted £39 5s. per ton, ex store.

GLAUBER SALTS.—English material unchanged at £4 per ton, ex store or station. Continental quoted £2 15s. per ton, c.i.f. U.K. ports.

LEAD, RED.—Imported material on offer at £30 15s. per ton, ex store.

LEAD, WHITE.—Quoted £31 10s. per ton, ex store.

LEAD ACETATE.—White crystals offered from the Continent at £42 7s. 6d. per ton, c.i.f. U.K. ports; brown about £40 5s. per ton, c.i.f. U.K. ports; white crystals offered on spot at about £43 15s. per ton, ex store.

MAGNESITE, GROUND CALCINED.—Quoted £8 10s. per ton, ex store. In moderate demand.

POTASH, CAUSTIC, 88/92%.—Solid quality quoted £28 15s. per ton, c.i.f. U.K. ports, minimum 15-ton lots. Under 15-ton lots, £29 10s. per ton; liquid, £15 per ton, minimum 15-ton lots. Under 15-ton lots, £15 7s. 6d. per ton, c.i.f. U.K. ports.

POTASSIUM BICHROMATE.—Unchanged at 4½d. per lb., delivered.

POTASSIUM CARBONATE.—96/98% quoted £27 5s. per ton, ex wharf, early shipment. Spot material on offer at about £28 10s. per ton, ex store.

POTASSIUM CHLORATE.—Powdered quality on offer at £24 5s. per ton, c.i.f. U.K. ports. Crystals, £2 per ton extra.

POTASSIUM NITRATE.—Rather cheaper quotations from the Continent. Now quoted £20 7s. 6d. per ton, c.i.f. U.K. ports. Spot material on offer at £21 7s. 6d. per ton, ex store.

POTASSIUM PERMANGANATE, B.P. CRYSTALS.—Quoted 6½d. per lb., ex store, spot delivery.

POTASSIUM PRUSSIATE (YELLOW).—Unchanged at 6⅞d. per lb., ex store, spot delivery.

SODA CAUSTIC.—Powdered, 98/99%, £19 7s. 6d. per ton; 76/77%, £15 10s. per ton; 70/72%, £14 10s. per ton, carriage paid station. Minimum, 4-ton lots on contract. Spot material, 10s. per ton extra.

SODIUM ACETATE.—English material quoted £21 10s. per ton, ex store. Continental on offer at £17 15s. per ton, c.i.f. U.K. ports.

SODIUM BICARBONATE.—Refined recrystallised quality, £10 10s. per ton, ex quay or station. M.W. quality, 30s. per ton less.

SODIUM BICHROMATE.—Quoted 3¼d. per lb., delivered buyers' works.

SODIUM CARBONATE (SODA CRYSTALS).—£5 to £5 5s. per ton, ex quay or station; powdered or pea quality, £1 7s. 6d. per ton; alkali, 58%, £8 12s. 3d. per ton, ex quay or station.

SODIUM HYPOSULPHITE.—Large crystals of English manufacture quoted £9 10s. per ton, ex store. Minimum 4-ton lots. Continental on offer at about £8 2s. 6d. per ton, ex wharf, prompt shipment Pea crystals of British manufacture quoted £15 5s. per ton, ex station, 4-ton lots.

SODIUM NITRITE, 100%.—Quoted £19 15s. per ton, ex store.

SODIUM PRUSSIATE (YELLOW).—In moderate demand and price unchanged at about 4¼d. per lb., ex store. Offered for prompt shipment from the Continent at 4¼d. per lb., ex wharf.

SODIUM SULPHATE (SALTCAKE).—Price for home consumption, £3 7s. 6d. per ton, ex works.

SODIUM SULPHIDE.—Prices for English material as follows: 60/62%, solid now £10 10s. per ton; broken, £11 10s. per ton; flake, £13 5s. per ton. Crystals, 31/34%, £7 10s. per ton to £8 5s. per ton, according to quality, delivered your works, minimum 4-ton lots on contract. Prices for spot delivery 5s. per ton higher for solid, 2s. 6d. per ton for crystals. Offered from the Continent at about £9 5s. per ton, c.i.f. U.K. ports. Broken, 15s. per ton extra.

SULPHUR.—Flowers, £12 10s. per ton; roll, £11 per ton; rock, £11 per ton; floristella, £10 per ton; ground American, £9 5s. per ton, ex store. Prices nominal.

ZINC CHLORIDE.—British material, 98/100%, quoted £24 15s. per ton, f.o.b. U.K. ports. 98/100%, solid on offer from the Continent at about £21 15s. per ton, c.i.f. U.K. ports; powdered, 20s. per ton extra.

ZINC SULPHATE.—Continental material now quoted £11 5s. per ton, ex wharf.

NOTE.—The above prices are for bulk business, and are not to be taken as applicable to small parcels.

Power Alcohol in Malaya

ANNUAL yields as high as 1,000 gallons of power alcohol an acre are probable on the Nipah palm plantations in the Federated Malay States, according to the 1926 report of the Chief Secretary to the Government of the States. There are already in existence two estates with a planted area of over 900 acres, and the growth is reported to be excellent, while the older palms are already bearing. The Department of Agriculture has records of yields over a period of two years from some palms eight to nine years old, growing in conditions less favourable than those on estates. If such difficulties as those of maintaining an adequate tapping force, and of finding a stable and satisfactory market can be overcome, the prospects would appear to be very bright.

Manchester Chemical Market

(From Our Own Correspondent.)

Manchester, August 18, 1927.

Up to the present there has been little improvement in the demand for heavy chemical products on this market. Home sales in this area are largely regulated by the condition of the textile and allied industries, and, as the cotton trade in particular is by no means in a satisfactory state, business in chemicals is correspondingly affected. Demand for shipment is on a moderate scale, with inquiry largely restricted to the Dominion and eastern markets.

Heavy Chemicals

Values of nitrite of soda are fairly steady at £19 to £19 5s. per ton, although only a quiet business is being done. Phosphate of soda also is in limited request but prices are held at from £12 10s. to £12 15s. per ton. Glauber salts are easy at about £3 7s. 6d. per ton, and the market for this material is inactive. Both alkali and caustic soda are moving off in fairly satisfactory quantities, the former at £6 15s. per ton, and latter at from £14 10s. to £16 10s. per ton, according to quality. Offers of bichromate of soda keep steady at round 3d. per lb., and a moderate inquiry for this has been reported. In spite of a somewhat poor demand for sulphide of soda, quotations are maintained at about £8 10s. per ton for the commercial quality and £11 5s. for the 60–65 per cent. concentrated solid. Bicarbonate of soda attracts a moderate amount of attention, and prices are firm at about £10 10s. per ton. In saltcake only a quiet trade is passing just now at about £3 12s. 6d. per ton. Hyposulphite of soda is on the quiet side, but values are maintained, photographic quality selling at about £16 10s. per ton and commercial at from £9 10s. to £9 15s. Trade in chlorate of soda is on a quiet scale, and quotations continue to show an easy tendency, current offers being at about 2¾d. per lb. A fairly steady feeling is in evidence in the case of prussiate of soda, and a moderate business is reported; round 4¼d. per lb. is being asked here for this material.

Only a moderate amount of interest in permanganate of potash has been shown by buyers during the past few days; the commercial quality ranges from 5d. to 5¼d. per lb. and the pharmaceutical at 6½d. Caustic potash keeps very firm at about £31 per ton, and a fair trade is being transacted. Yellow prussiate of potash is not particularly active, and sales have been made at round 6⅝d. per lb. Bichromate of potash is steady and in quiet demand at 4¼d. to 4¼d. per lb. Carbonate of potash is selling in fair quantities at from £27 to £27 5s. per ton. Chlorate of potash is in limited request, but values are held at about 3d. per lb.

Acetate of lime is in moderate demand at steady prices, grey being quoted at £15 10s. and brown quality at round £8 10s. per ton. There is still a certain amount of easiness in the case of the acetates of lead and not much business is being done; white acetate is being offered at from £42 per ton and brown at about £40. Nitrate of lead is about unchanged at £38 per ton, but inquiry is still slow. Sulphate of copper is still in fair request, and prices are firm at up to £25 10s. per ton, f.o.b. Arsenic meets with a quietly steady demand, and values are maintained at about £16 15s. per ton at the mines for white powdered, Cornish makes.

Acids and Tar Products

Although there is only a quiet trade passing in oxalic acid, quotations are steady at about 3¼d. per lb. Acetic acid moves off in fair quantities at £66 per ton for glacial and £37 10s. for the 80 per cent. commercial. Tartaric acid is held at from 1s. 3d. to 1s. 3¼d. per lb., but the buying movement remains comparatively slow. Citric acid is on the quiet side, but at 1s. 7d. per lb. quotations show little change on the week.

With inquiry still fairly brisk and offers short, creosote oil keeps firm at up to 7¾d. per gallon. Pitch also is scarce and values are steady but largely nominal at about £4 10s. per ton, f.o.b. The weakness in solvent naphtha has been accentuated by the lower prices for petrol, and about 1s. per gallon, delivered, is now being quoted in connection with the very limited business that is passing. Crude carbolic is scarce and firm at 2s. 6d. per gallon, with crystals quiet but steady at up to 8d. per lb.

Italian Chemical Industry in 1926

More Foreign Competition and Decreased Consumption

The report by Mr. E. C. Donaldson, Commercial Counsellor, and Mr. H. C. A. Carpenter, Commercial Secretary to the British Embassy at Rome, on the Commercial, Industrial, and Economic Situation in Italy in 1926 states that the heavy chemical industry was affected by the depression of other industries, especially the textile. The demand for chemical products fell off sensibly, notably in the second half of the year, causing heavy reductions of prices and a diminution of production. The electro-chemical industry was normally active, apart from a slight reduction of output by certain undertakings. The production of explosives, on the other hand, increased considerably, their sale being facilitated by an enlarged demand for explosives for mining in hydro-electric and port works.

The tartaric acid industry was active owing to increased sales, but citric acid passed through a period of crisis caused by world over-production. At the end of the year, however, stocks had been reduced to a figure lower than that of preceding years. On the whole the tanning extract industries had a normal year, but those producing material for colours suffered from reduced consumption on the part of the textile industries. The paint and varnish industry remained on the same level of activity as in 1925.

Pharmaceutical Products

Pharmaceutical chemicals and preparations suffered from the competition of goods introduced on reparations account and from the keen competition of the great German trusts, which, especially during the last few months of the year, benefited by the improvement of the exchange. Patent and proprietary medicines were in steady demand throughout the year, and this branch of the industry did fairly well. In some cases seed oil establishments had to close down and the soap industry also had to face many difficulties, chiefly due to high cost of raw materials caused by the fact that the depreciation of the lira corresponded with the period of highest prices of these materials. On the whole, however, this industry succeeded in maintaining moderate activity.

In the paper-making industry a crisis has been reached following the limitation of the number of pages in newspapers and the suspension of certain dailies with a large circulation.

An Esthonian Low-temperature Distillation Project

The possibility of the commercial operation in Esthonia of plant for the distillation of shale by the Crozier process, the patents of which are held by Mineral Oils Extraction, Ltd., has been investigated, and the company has decided to erect there a preliminary twenty-five-ton per day plant for the treatment of high-grade Esthonian shale. The process has been subjected to a test by H.M. Fuel Research Board, stated to be satisfactory, although the report has not yet been published. To facilitate the exploitation of the plant and the development of the process in this and other directions it has been decided to convert the company from a private to a public one, by the issue of 1,000 £10 shares, which have so far been held in reserve.

Merchandise Marks Inquiry: Pottery

The standing committee (general merchandise) of the Board of Trade will hold their inquiry as to whether imported pottery should bear an indication of origin on Monday, Tuesday and Wednesday, October 24, 25 and 26. The inquiry will be held at the New Public Offices, Great George Street, London, S.W.1. Any communication on the subject should be addressed to the Secretary, Mr. E. W. Reardon, at that address.

Safeguarding of Key Industries: Ethylene Glycol

The Treasury have exempted from duty under the Finance Act, 1926, imported ethylene glycol (glycol; alcohol ethylene), and glycol ethers, from August 19, 1927, to March 6, 1928. The Treasury Order will be published shortly.

Company News

GOODLASS WALL AND CO.—There is declared a dividend of 12½ per cent. on the ordinary shares for the past year, adding £13,000 to the reserve.

TAYLORS (CASH CHEMISTS) TRUST.—The directors announce a first interim dividend of 10 per cent. on deferred ordinary shares, payable on August 31.

EASTMAN KODAK CO. OF NEW JERSEY.—The directors have declared a regular dividend of $1.25 per share on common stock and extra dividend of $0.75 per share on common stock.

SOUTH METROPOLITAN GAS CO.—An interim dividend is declared of 5 per cent. per annum less income tax, on ordinary stock for half-year, payable September 3. The dividend last year was the same.

RHODESIAN AND GENERAL ASBESTOS.—Net profits for the year ended March 31 were £244,859, and £83,795 was brought forward. After reserving £25,000 for taxes, a final dividend of 10 per cent. is proposed, making 20 per cent. for the twelve months. An interim dividend of 5 per cent. for the current year has been declared.

SOUTH AFRICAN ALKALI.—Results of operations for the quarter ended June 30—Brine treated, 2,664,000 gallons; soda ash produced, 546 tons; soda ash sold, 775 tons. Production and sales for the quarter constitute a record. Work on the plant necessary to permit of an increase in the production of soda ash is well on the way.

B.E.A. FIBRE AND INDUSTRIAL.—Net profits for the past year of £6,277 compare with £6,284, and as £511 was brought forward, the available balance amounted to £6,788. An interim dividend of 2½ per cent., has already been paid, and it is now proposed to pay a final dividend of 2½ per cent., making 5 per cent. for the year, as against 2½ per cent., and to carry forward £1,020. The year's crop of 1,507 tons of fibre constituted a record for the company.

INTERNATIONAL NICKEL CO.—Earnings for six months to June 30, 1927, are reported at $4,247,162, against $4,267,576 for the first half of 1926; other income gave $40,020, against $85,888, making total income $4,287,183, against $4,353,464. Administration and general expense absorbed $304,001, reserved for Federal and franchise taxes $326,024, leaving net operating income of $3,657,157, compared with $3,597,162, depreciation and depletion took $799,706, and Orford works property expense $54,820, the profit on period thus being $2,802,630, against $2,774,689. Dividends: Preferred absorbed $267,378 and common $1,673,384, leaving $861,868, against $833,927.

Chemical Trade Inquiries

The following inquiries, abstracted from the "Board of Trade Journal," have been received at the Department of Overseas Trade (Development and Intelligence), 35, Old Queen Street, London, S.W.1. British firms may obtain the names and addresses of the inquirers by applying to the Department (quoting the reference number and country), except where otherwise stated.

CAUSTIC SODA PRIMARY CELLS.—The Victorian Government Railways are calling for tenders, to be presented by October 5, 1927, for caustic soda primary cells. Further information can be obtained by British firms desirous of offering material of British manufacture on application to the Department of Overseas Trade. (Reference B.X. 3717.)

OXY-ACETYLENE CUTTING PLANT.—The Director-General India Store Department, Branch No. 10, Belvedere Road, Lambeth, S.E.1, is inviting tenders for one oxy-acetylene cutting plant. Tenders are due on September 2. Specifications and forms of tender can be obtained from the Director-General at the above address.

HEAVY CHEMICALS, FERTILISERS.—A firm of agents established at Lisbon are desirous of obtaining the representation of British manufacturers of caustic soda, chlorate of calcium, powdered carbonate of soda, bicarbonate of soda, sulphate of ammonia, nitrate of soda and superphosphates. (Reference No. 141.)

New Chemical Trade Marks

Applications for Registration

This list has been specially compiled for us from official sources by Gee and Co., Patent and Trade Mark Agents, Staple House, 51 and 52, Chancery Lane, London, W.C.2, from whom further information may be obtained, and to whom we have arranged to refer any inquiries relating to Patents, Trade Marks and Designs.

Opposition to the Registration of the following Trade Marks can be lodged up to September 10, 1927.

"OXALBA."

477,515. Class 1. Chemical substances included in Class 1, for use in the manufacture of enamel goods. J. G. Gregory and Son, 10, Penkhull Street, Newcastle-under-Lyme, Staffordshire; mineral importers. February 7, 1927.

"ERGANIL."

479,427. Class 1. Chemical substances used in manufactures, photography or philosophical research, and anti-corrosives. I. G. Farbenindustrie Aktiengesellschaft (a corporation organised according to German laws), Mainzer Landstrasse, 28, Frankfort-on-Main, Germany; manufacturers. April 2, 1927. Address for service in the United Kingdom: c/o Johnson and Willcox, 47, Lincoln's Inn Fields, London, W.C.2.

"SENTILITE."

479,573. Class 1. A composition for the prevention or removal of boiler scale. The Sentinel Waggon Works, Ltd., 17, Iddesleigh House, Caxton Street, Westminster, London, S.W.1; manufacturers. April 7, 1927.

"MITHAYRION."

479,657. Class 1. Chemical substances used in manufactures, photography or philosophical research, and anti-corrosives. Ernest Everard Gates, Old Buckenham Hall, Old Buckenham, near Norwich, Norfolk; and 8A, Carlos Place, London, W.1; of no occupation. April 11, 1927. (To be Associated. Sect. 24.)

479,658. Class 2. Chemical substances used for agricultural, horticultural, veterinary and sanitary purposes. Ernest Everard Gates, as above. April 11, 1927. (To be Associated. Sect. 24.)

479,659. Class 3. Chemical substances prepared for use in medicine and pharmacy. Ernest Everard Gates, as above. April 11, 1927. (To be Associated. Sect. 24.)

479,660. Class 4. Raw, or partly prepared, vegetable, animal and mineral substances used in manufactures, now included in other classes. Ernest Everard Gates, as above. April 11, 1927. (To be Associated. Sect. 24.)

"ZEBLAK."

481,708. Class 1. Chemical substances used in manufactures, photography or philosophical research, and anti-corrosives. Reckitt and Sons, Ltd., Kingston Starch Works, Dansom Lane, Hull, Yorkshire; manufacturers. June 20, 1927.

Tariff Changes

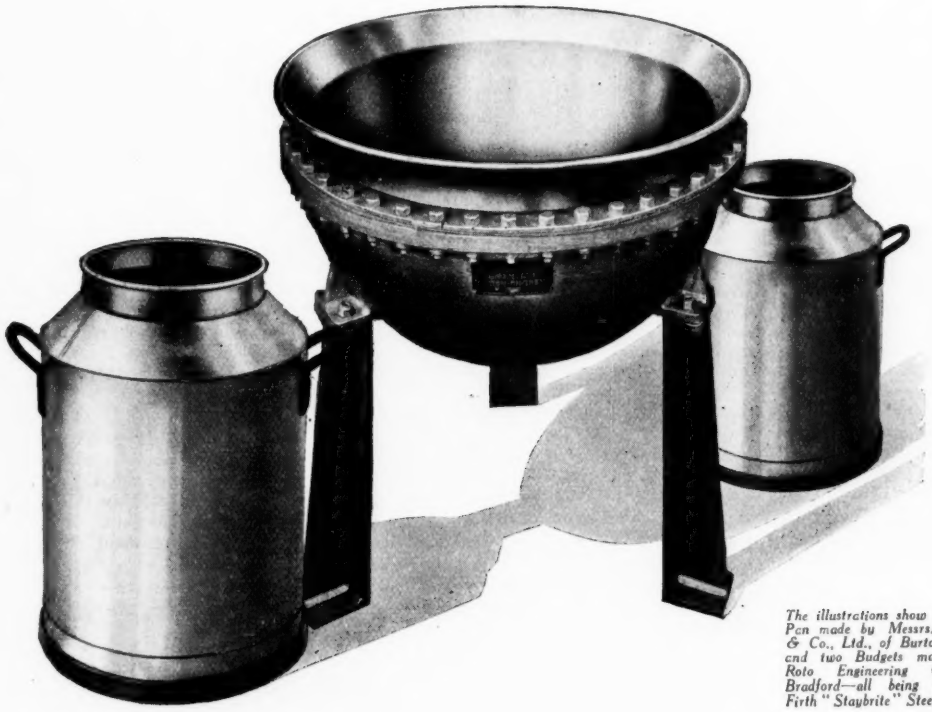
CHILE.—A recent law increases the export duty on iodine exported from Chile to 6 pesos per kg.

HUNGARY.—Details of the reduced Hungarian import duties on Czechoslovak and United Kingdom chemicals is given in the Board of Trade Journal for August 11.

POLAND.—In virtue of a recent order the duty on mineral superphosphates has been increased from 1 to 3 zloty per 100 kgs. Mineral superphosphates for agriculture may be imported duty free under permit. By another order white lead, lead sulphate, and other combinations of lead may only be imported into Poland under special permit as from January 12, 1928.

TUNIS.—A recent Decree provides for reductions of the Customs duties on mononitrobenzols, chlorate of soda, nitric collodion of cotton, and nitrated derivatives of coal distillation originated in and coming from France and intended for the manufacture of explosives (except gunpowder).

213/3/88



The illustrations show a Chemical Pan made by Messrs. S. Briggs & Co., Ltd., of Burton-on-Trent, and two Budgets made by the Roto Engineering Co., Ltd., Bradford—all being made from Firth "Staybrite" Steel.

With a yield point of about 12 to 15 tons per square inch and an elongation of 55% to 70%, Firth "Staybrite" has exceptional ductility combined with maximum corrosion-resisting qualities, which it possesses to a remarkable degree. It may be cold pressed far in advance of the so-called "stainless iron," and, moreover, presents no difficulties in manipulation, since it may be welded, riveted, soldered and brazed without trouble.

Firth "Staybrite" is supplied in the form of descaled Sheets and Strip, Bars, Plates, Structural Sections, Tubes, Wire Forgings and Castings.

Write for Booklet C.A.5 on this subject.

BY WHOSE AUTHORITY?

WHO has authority to buy rust in your business? ..... No one? ..... Absurd? ..... Not at all, sir! Somewhere in your organisation—up in the D.O. or in the Stores or out there in the shops someone is constantly investing in Rust on your behalf—on behalf of your customers. Somebody is putting a rust-begetting material into those vitals of your product known as the "Corrosion Zones"—Zones where mechanisms have to work day in day out under the corroding influence of steam, water, or chemicals even.

Someone is investing in trouble for you—breakdown — failure — delay — lost efficiency. No matter what materials go to the making of your machine—keep them away from the Corrosion Zones and there install details made from Firth "Staybrite" Steel.

THOS. FIRTH & SONS, LIMITED, SHEFFIELD

Commercial Intelligence

The following are taken from printed reports, but we cannot be responsible for any errors that may occur.

Deed of Arrangement

WILSON, Frederick, and WATSON, Fred, Foreside Works, Denholme, trading as YEADON DYEING CO., dyers. (D.A., 20/8/27.) Filed August 15. Trustee, A. Greaves, 35, Bank Street, Bradford, C.A. Secured creditors, £29,581; liabilities unsecured, £23,296; assets, less secured claims, £8,251.

Mortgages and Charges

[*NOTE.—The Companies Consolidation Act of 1908 provides that every Mortgage or Charge, as described therein, shall be registered within 21 days after its creation, otherwise it shall be void against the liquidator and any creditor. The Act also provides that every Company shall, in making its Annual Summary, specify the total amount of debts due from the Company in respect of all Mortgages or Charges. The following Mortgages and Charges have been so registered. In each case the total debt, as specified in the last available Annual Summary, is also given—marked with an *—followed by the date of the Summary, but such total may have been reduced.*]

HEPPELLS, LTD., London, E.C., chemists. (M., 20/8/27.) Registered August 4, £5,720 Land Registry charge, to E. S. Halford, Lieut.-Col. (retired), R.A.F., and another, 12, Clarges Street, W., charged on 1, Eden Street, N.W. *£199,300. November 29, 1926.

Satisfactions

DIXON'S WHITE, LTD. (late RAGOSINE AND CO., LTD.), London, E., paint manufacturers. (M.S., 20/8/27.) Satisfaction registered August 3, £1,000, part of amount registered October 26, 1922.

LUCE'S EAU-DE-COLOGNE CO., LTD., Southampton. (M.S., 20/8/27.) Satisfaction registered August 5, £700, registered January 8, 1927.

STAFFORDSHIRE CHEMICAL CO. (1917), LTD., Tunstall. (M.S., 20/8/27.) Satisfaction registered August 2, £12,000, registered July 13, 1927.

THOMPSON (JOHN) (WHOLESALE DRUGGISTS, 1921), LTD., Liverpool. (M.S., 20/8/27.) Satisfaction registered August 4, £7,000, registered March 2, 1921.

New Companies Registered

ASSOCIATED PHOSPHATE MANUFACTURERS, LTD. Private company. Registered August 8. Capital, £15,000 in £1 shares. To acquire from E. W. Geere the benefit of certain existing inventions relating to a process for the manufacture of phosphates, and to carry on the business of manufacturers and sellers of phosphates, food, chemical and medical preparations, chemists, etc. The subscribers are: E. W. Geere and A. J. Driver. Directors: E. W. Geere (chairman and permanent governing director) and H. P. Buttrick. Registered office: 82, Borough High Street, S.E.1.

BRITISH CISA FIBRES, LTD. Registered as a private company on August 11. Nom. capital, £1,000 in £1 shares. Objects: To carry on the business of manufacturers, merchants, buyers, sellers, makers-up and packers of and dealers in wood pulp, flax, artificial silk, chemicals, fibrous substances and such other things capable of use in the manufacture of pulp and artificial silk, etc. Directors: A. Hentzen, G. E. J. Goedecke, B. Boncompagni, A. Nunzianti, E. Cattaneo. Registered office: 134, Deansgate, Manchester.

BRITISH MATCH CORPORATION, LTD., was registered as a public company on August 15. Nom. capital, £6,000,000 in £1 shares. Objects: To acquire and hold all or any of the shares of Bryant and May, Ltd., and of J. John Masters and Co., Ltd., to hold shares or interests in or bring about the amalgamation or fusion of interests of any companies, firms, or persons carrying on in Great Britain, Ireland, or any part of the British Empire, or elsewhere, the business of match manufacturing, or dealing in matches, match-making machinery or ingredients used in the manufacture of matches, or any ancillary business, to carry on any business connected with the manufacture, production, or importation of or dealing in matches, to enter into an agreement between this company, Bryant and May, Ltd., and Svenska Tandsticks Aktiebolaget (The Swedish Match Co.). Directors: G. W. Paton; C. E. Bartholomew; W. A. Fairburn; A. Hacking; A. Hepburn; C. O. Rennie; The Hon. Sir Arthur Stanley, G.B.E.; The Rt. Hon. John W. Wilson; I. Kreuger; Major J. W. Hills; M.P.; O. I. Andren; and H. O. Agrell.

JACKSON BROTHERS (LANCASHIRE), LTD. Private company. Registered August 15. Capital, £5,200 in £1 shares. Objects: To acquire the business of a manufacturer of and dealer in chemical goods now carried on by W. Jackson at Trafford Park, nr. Manchester, as "Jackson Brothers and Co.," etc., and to carry on the business of manufacturers of and dealers in chemicals, etc. Directors: W. Jackson; A. Jackson; H. L. Jackson; and E. Newport. Registered office: Trafford Park Road, Trafford Park, Stretford, nr. Manchester.

ORGANIC RADIUM, LTD. Private company. Registered August 13. Capital, £5,000 in £1 shares. Objects: To institute and conduct scientific research work in connection with animal, vegetable, mineral, and other products and produce, or in connection with the development of any new means of communication by radiography or radiophony, and to carry on the business of chemical manufacturers and merchants, etc. Subscribers: Mrs. Agnes M. Ireland; Constance M. Smith; A. J. de Courcy Ireland. A. J. de Courcy Ireland is first and permanent director.

SALINAX COMPANY, LTD. Private company, registered August 12. Capital, £2,100 in 2,000 6 per cent. cumulative preference shares, and 100 ordinary shares of £1 each. Objects: To carry on the business of manufacturers of and dealers in feeding stuffs and mineral salts, organic or inorganic, and whether for human or animal consumption, etc. Subscribers: A. T. C. Baker and W. G. A. Payne.

South African Resources of Fertilising Phosphates

DESPITE the contradictory opinions expressed by mining and agricultural experts, Major A. J. Pelling, of the Chemistry Department of the Rand University, is convinced that South Africa possesses extensive resources in fertilising phosphates which are not being properly exploited.

"To my knowledge there are large phosphatic deposits at Bandolierkop, in the Northern Transvaal, and at Mamre, along the coast north of Cape Town, which are suitable for fertilising purposes, and are being ignored for reasons of commercial policy," said Major Pelling in an interview. "The conversion of imported rock phosphate into superphosphate is already being carried on in certain factories in the Union, and there is nothing whatever to prevent rock phosphate from Bandolierkop and Mamre being used instead. Both Bandolierkop and Mamre phosphates can be used as fertilisers with or without treatment. Experiments have shown that ground rock phosphate can be applied to the South African soils with excellent results. Mamre phosphate has higher citric solubility, and it possesses the necessary fertilising element of which the soils of South Africa are urgently in need. It can be proved that superphosphates manufactured from Northern Transvaal rock can be sold in South Africa at prices competitive with those manufactured from imported rock."

Benn Brothers' Other Journals

THE CABINET MAKER.—The Art Training of the Middleman; Retail Furnishing Advertising Criticised; Furniture Shipments in July; Industrial Designs Competition.

THE ELECTRICIAN.—"Electricity Supply and the Consumer," by J. Rutherford Blaikie; "The Wilkinson 'Change Circuit,'" by H. M. Sayers; Determining Temperature Distribution: A Contribution to the Evaluation of the Flow of Heat in Isotropic Media; "Batteries for Electric Road Vehicles," by L. W. de Grave.

THE FRUIT GROWER.—Pollination for Fruit Production; Cambridge Fruit Campaign (illustrated); Egg and Poultry Marketing.

GARDENING ILLUSTRATED.—Border Carnations; "The Development of a Rock Garden," by Richard Beamish; The Adaptable Tulip.

THE GAS WORLD.—Annual Meeting of the Irish Association of Gas Managers; Use of Concrete in Road Construction; Some Notes on Sulphate of Ammonia.

THE HARDWARE TRADE JOURNAL.—Research in Relation to Merchandising; The Radio Trade: The Gramophone Pick-up; Hardware Imports and Exports.

THE TIMBER TRADES JOURNAL.—A Word About Bills of Lading; Facts About British Timber; Trade With Canada; On Balancing Cutters.